

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the Application of:

Adrian P. Wise

Filed: February 8, 2001

For: MULTISTANDARD VIDEO  
DECODER AND DECOMPRESSION  
SYSTEM FOR PROCESSING  
ENCODED BIT STREAMS INCLUDING  
CIRCUITRY FOR SELECTING TOKENS  
AND METHODS RELATING THERETO

20

§ Application No.: Not Yet Known

202

§ Art Unit: 2783 (anticipated)

con

§ Examiner: Follansbee, J. (anticipated)

202

§ Attorney Docket No.:

or

94100422(EP)USC1X1C1D11 PDDD

20

20

## COMMUNICATION - SUBMISSION OF FORMAL DRAWINGS

BOX PATENT APPLICATION  
Assistant Commissioner of Patents  
Washington DC 20231

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Transmitted herewith are 169 formal drawings on 124 sheets.

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Respectfully submitted,

DISCOVISION ASSOCIATES

RMH 50

Date: 2/8/01

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RS:sd

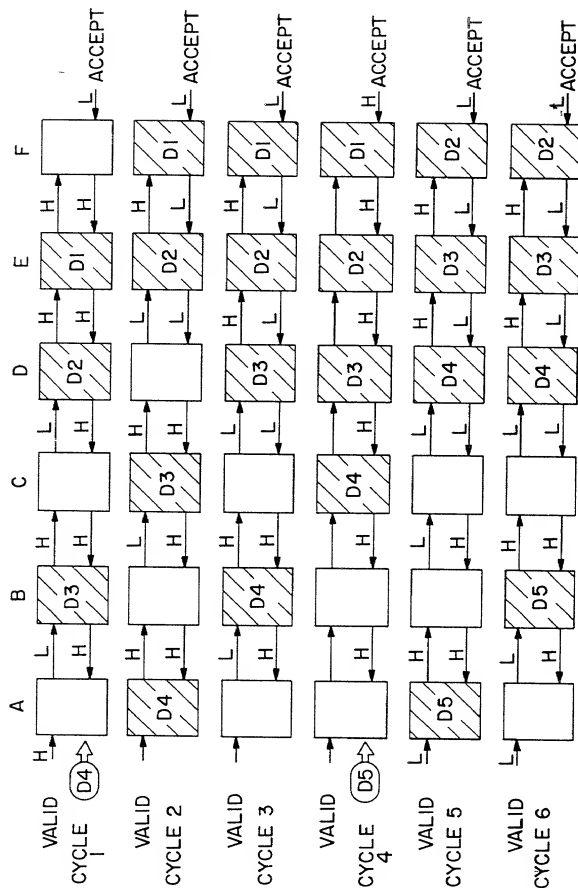


FIG. 1

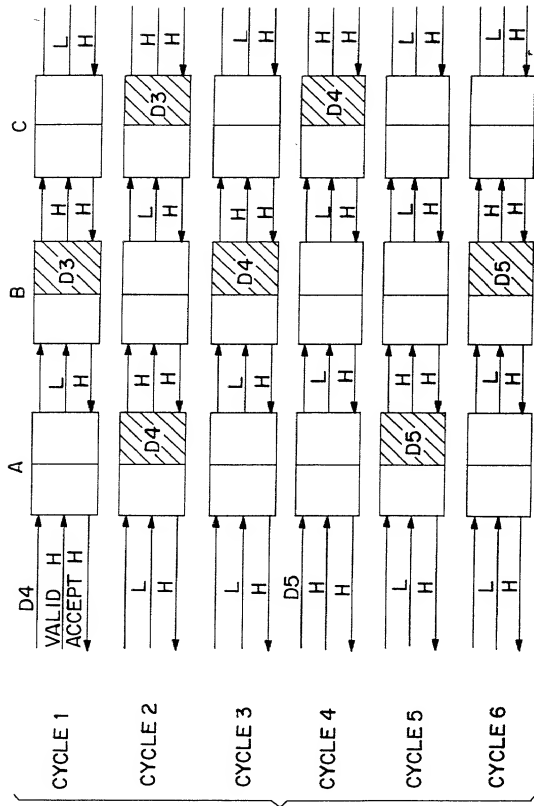


FIG. 2(A)

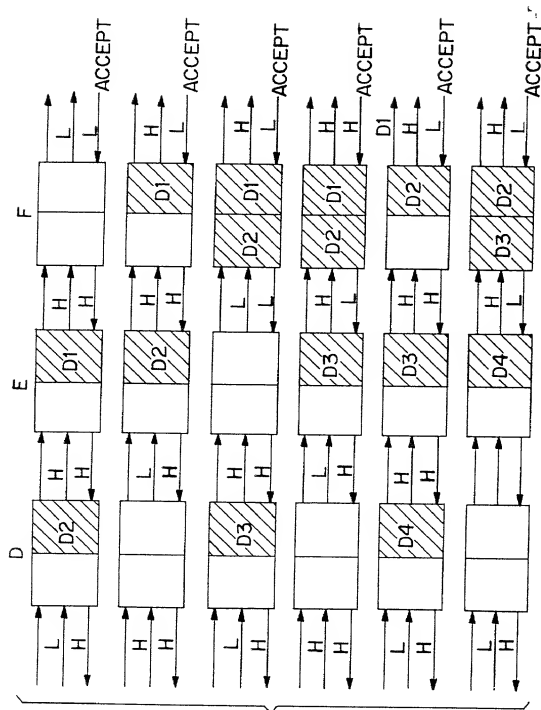


FIG. 2(B)

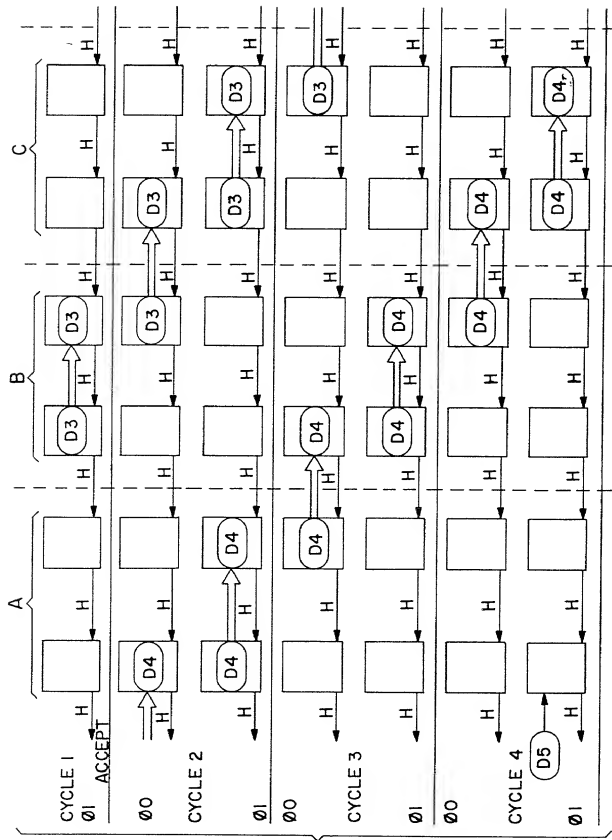


FIG. 3A-1

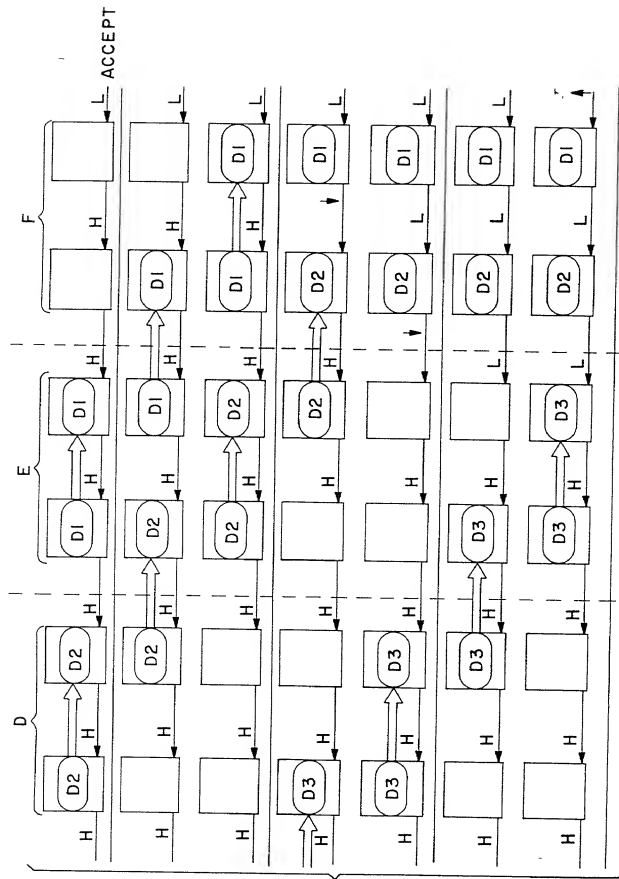


FIG. 3A-2

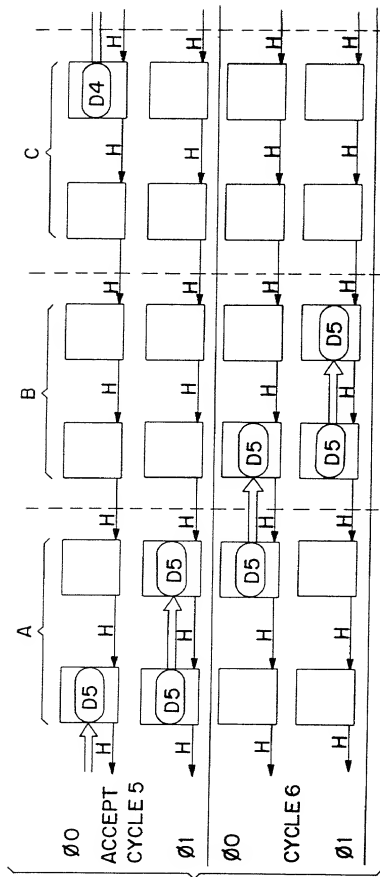


FIG 3B-1



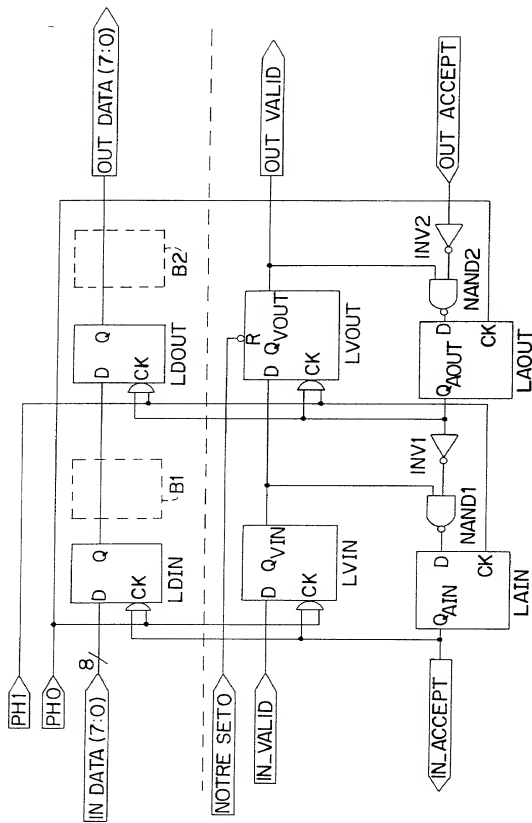
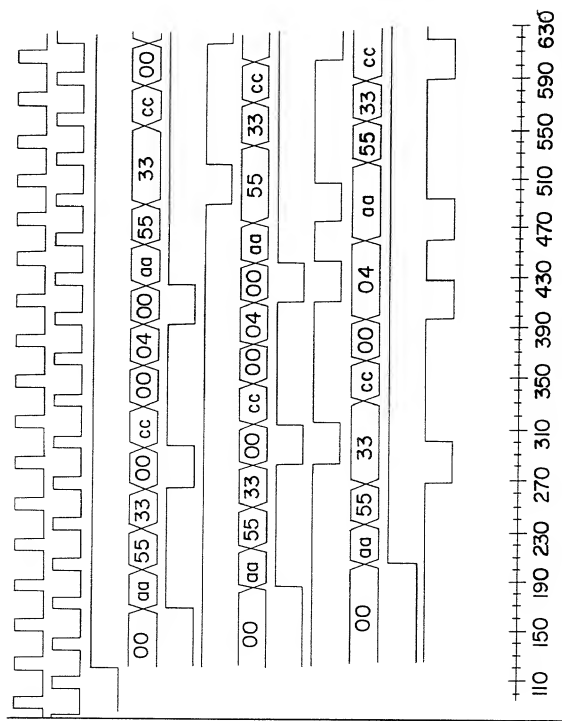


FIG. 4



TIME

FIG. 5(A)

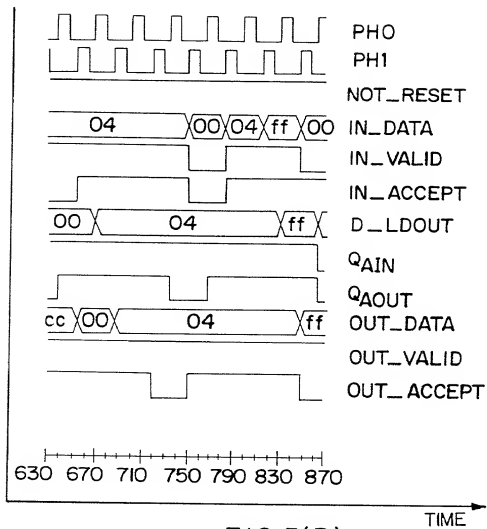


FIG. 5(B)

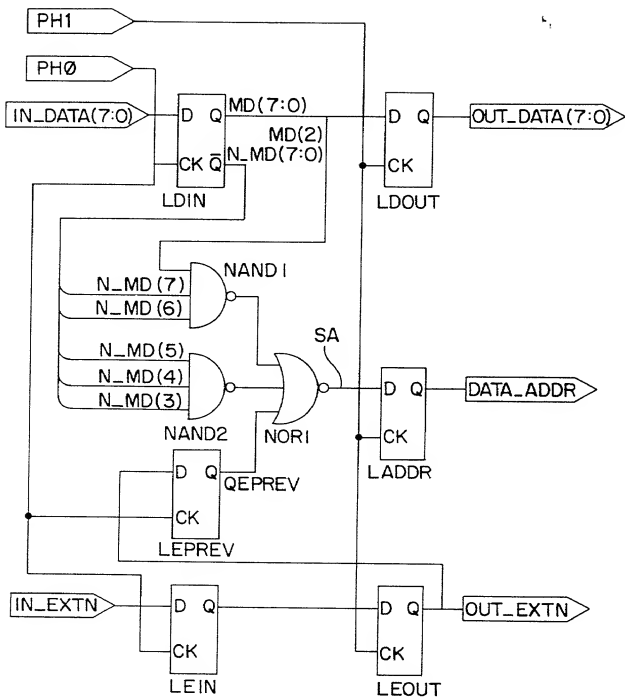


FIG. 6

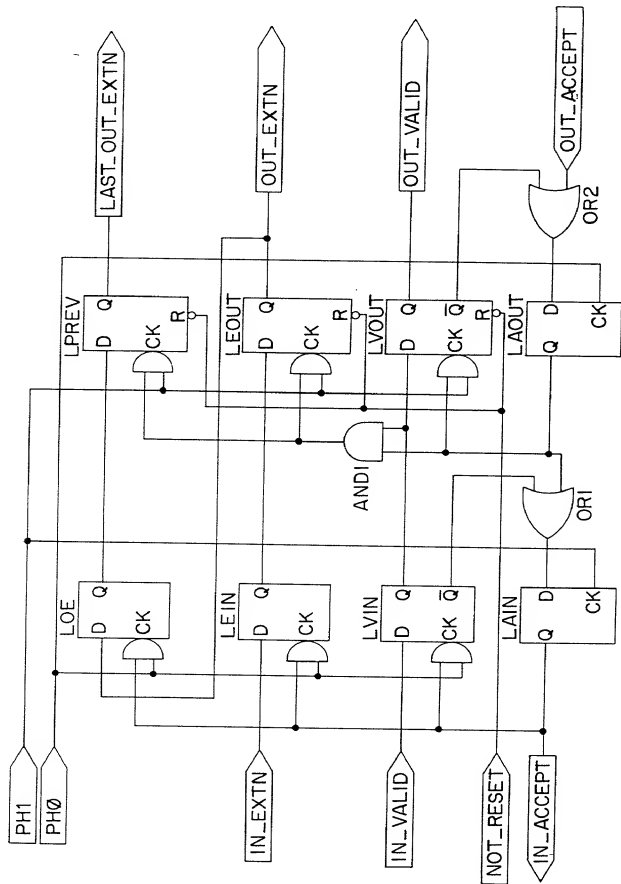


FIG. 7

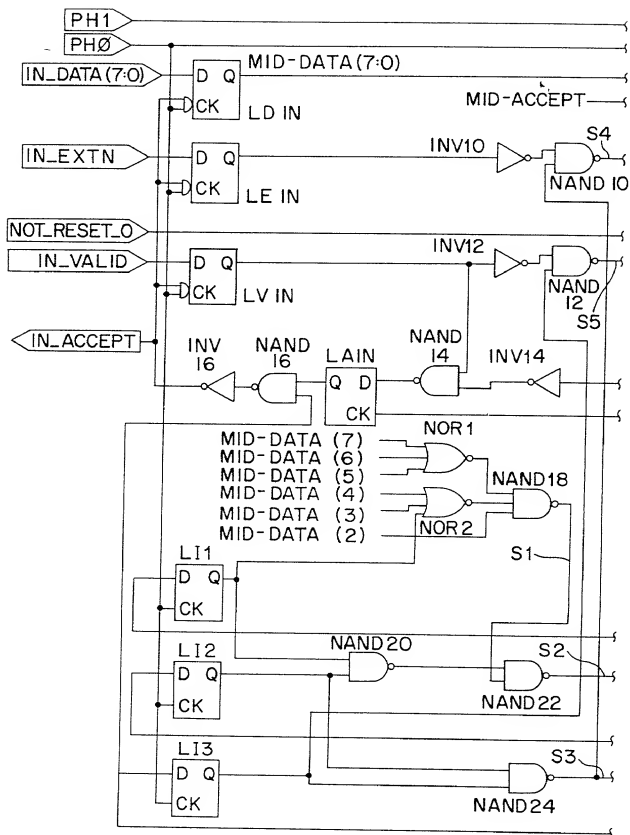


FIG. 8(A)

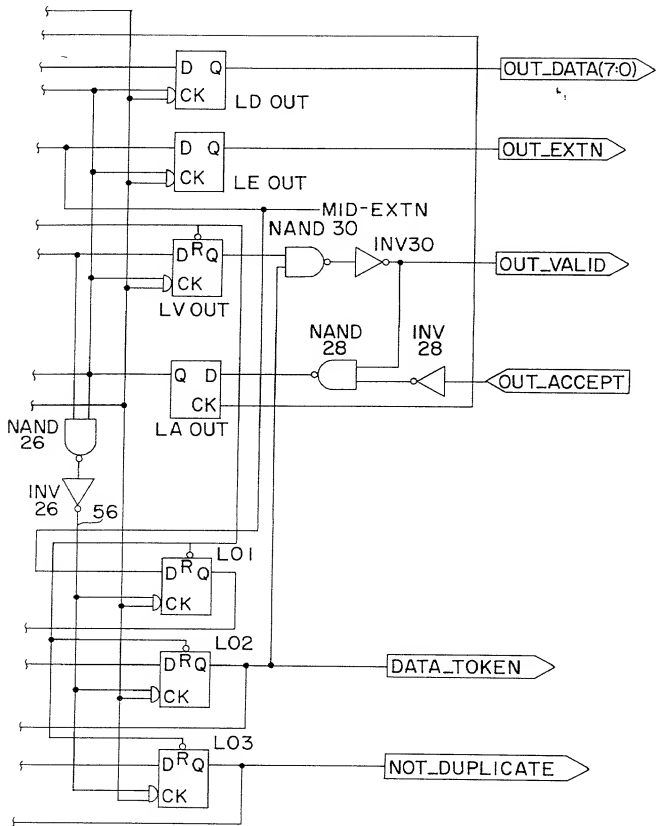


FIG. 8(B)

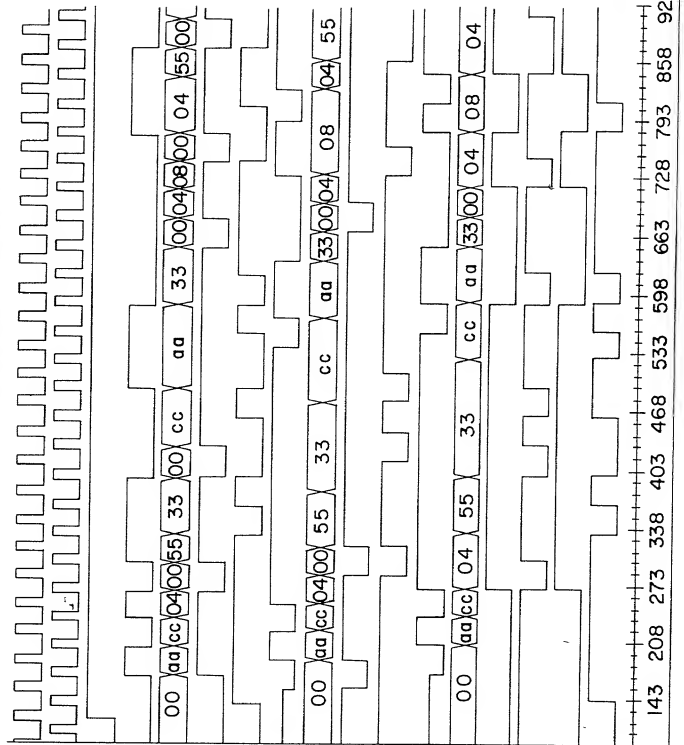


FIG. 9(A)

TIME

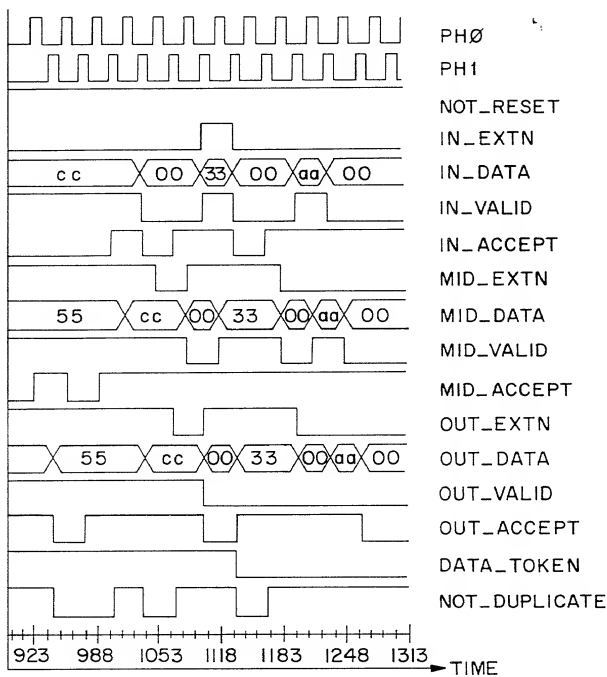


FIG. 9(B)

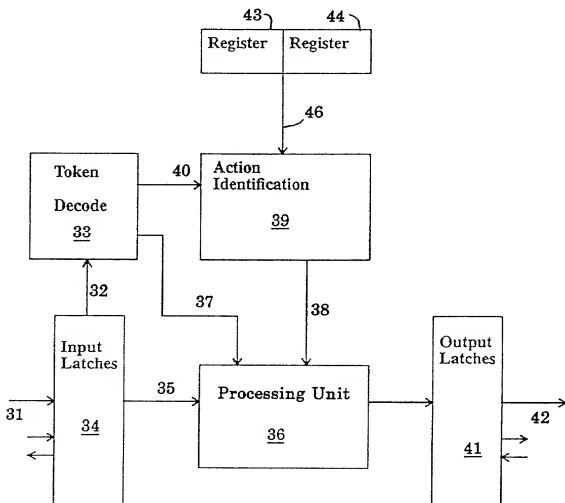


FIG. 10

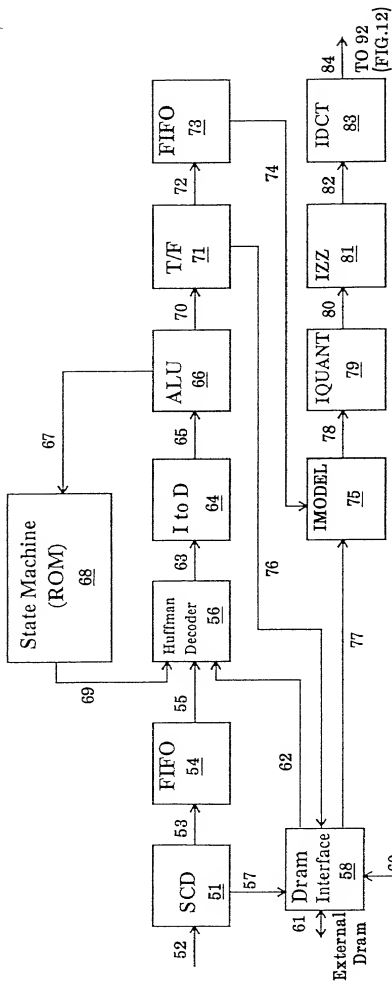


FIG. 11

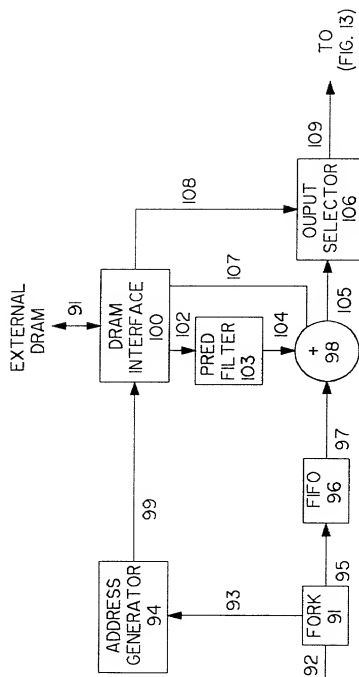


FIG. 12

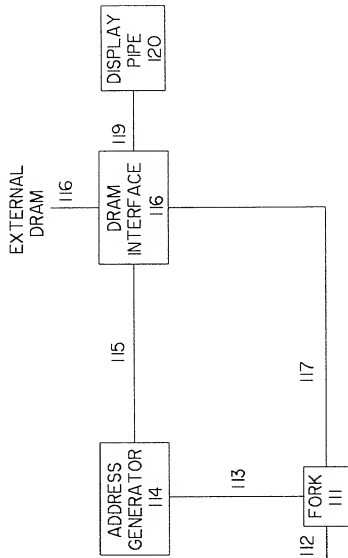


FIG. 13

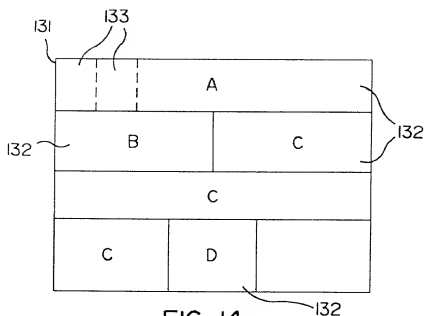


FIG. 14a

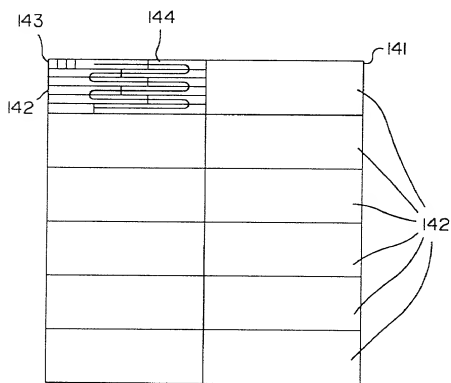


FIG. 14b

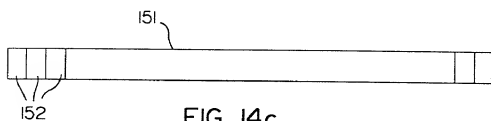
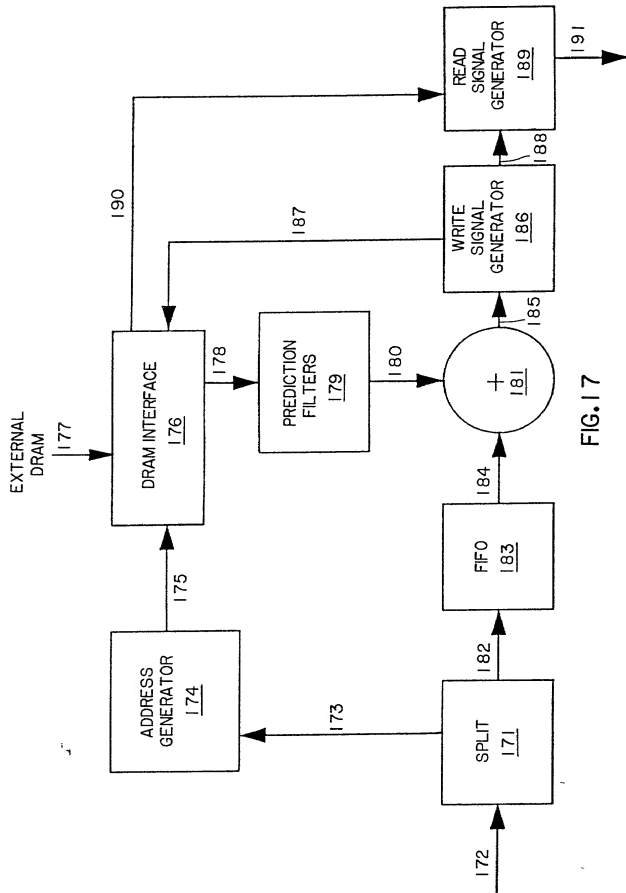


FIG. 14c





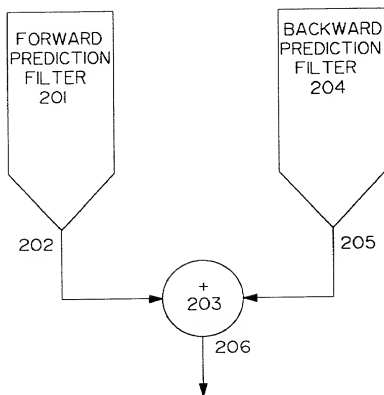
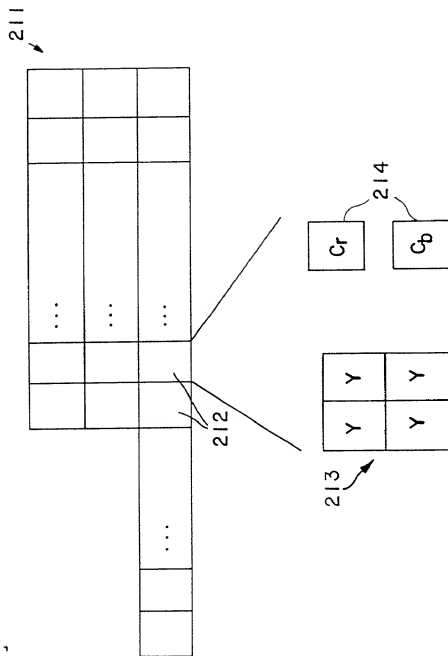


FIG. 18



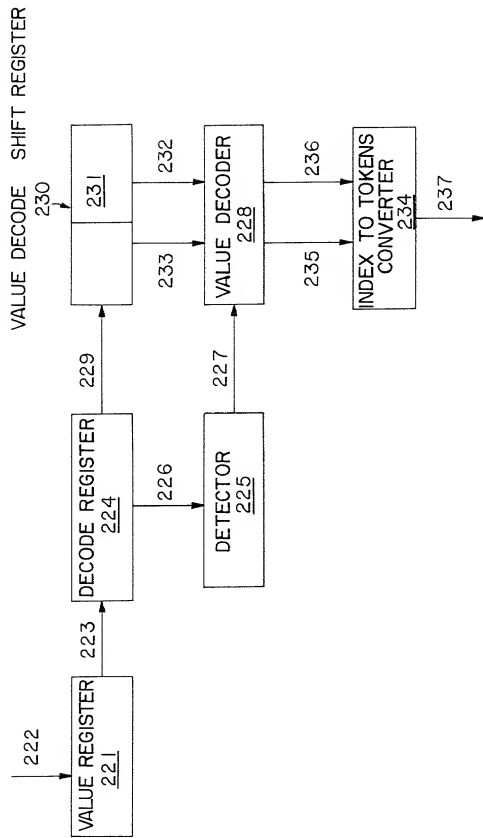


FIG.20



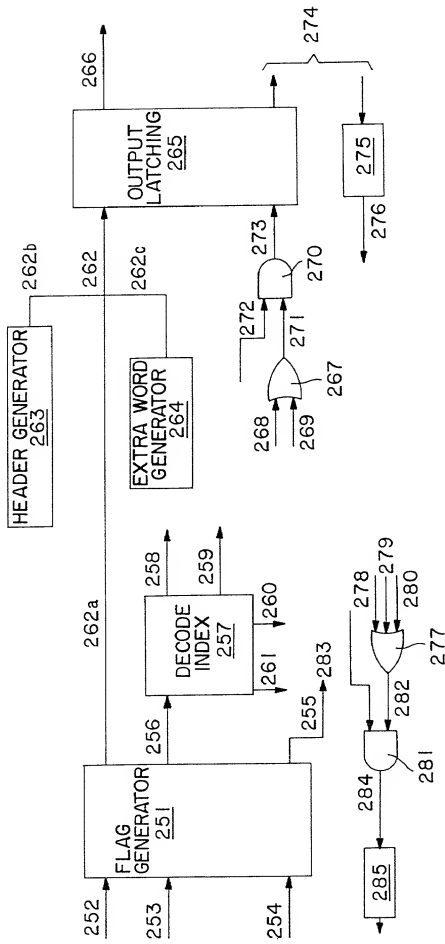


FIG. 22

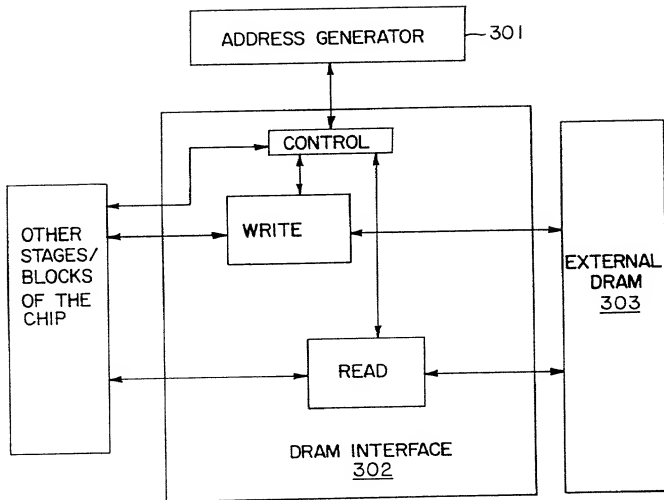


FIG.23

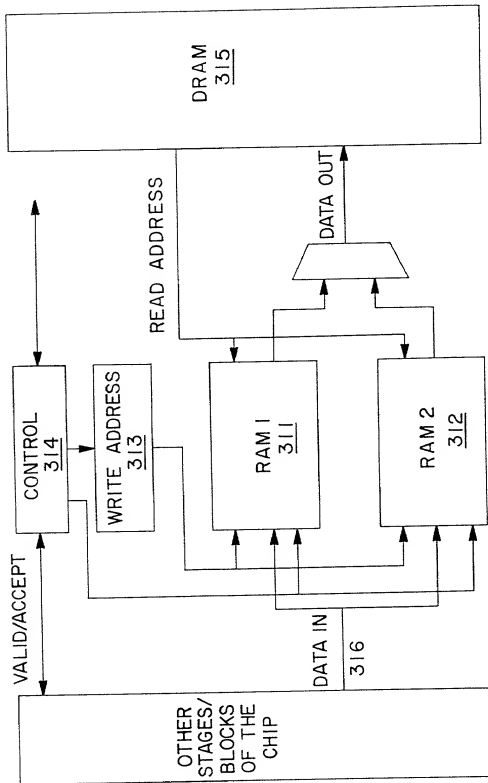


FIG.24

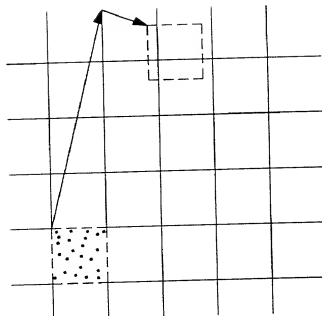


FIG. 25

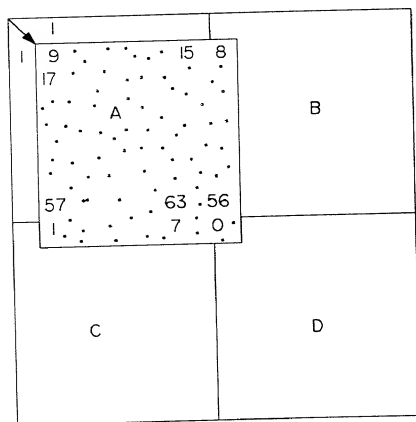


FIG. 26

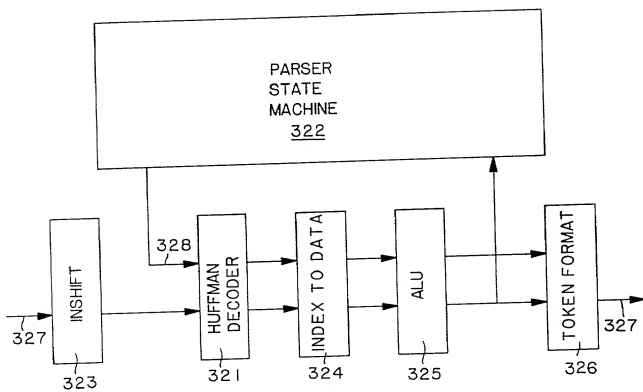


FIG.27

INPUT DATA

FORMAT  
331

1-D PREDICTION  
X-COORDINATE  
332

DIMENSION  
BUFFER  
333

1-D PREDICTION  
Y-COORDINATE  
334

OUTPUT DATA

FIG.28

09770382.020001

Multiplexed audio/video  
data

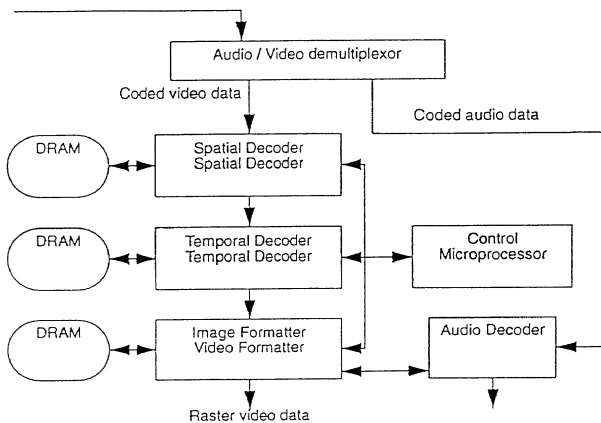


FIG.29

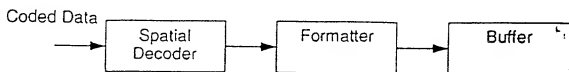


FIG.30

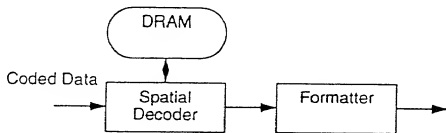


FIG.31

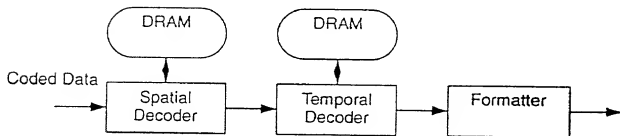


FIG.32

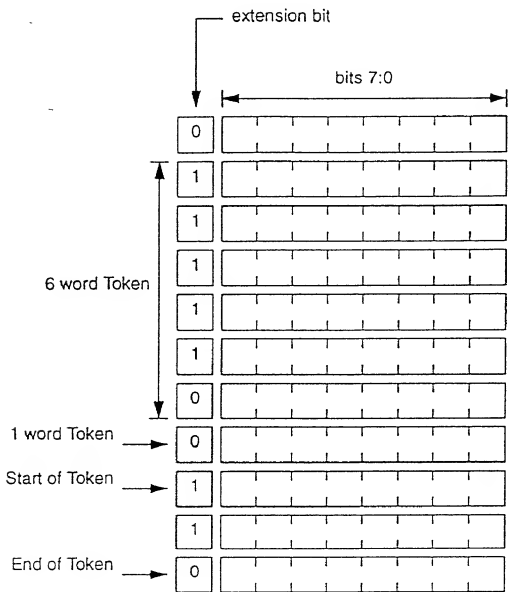


FIG.33

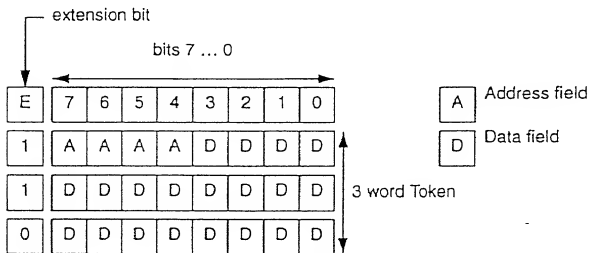


FIG.34

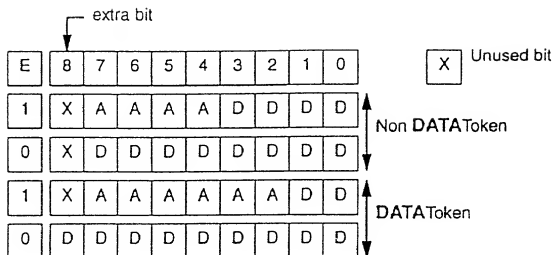
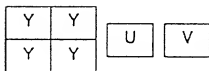


FIG.35



MPEG 4:2:0  
macroblock

FIG.36A



JPEG 2:1:1  
macroblock

FIG.36B

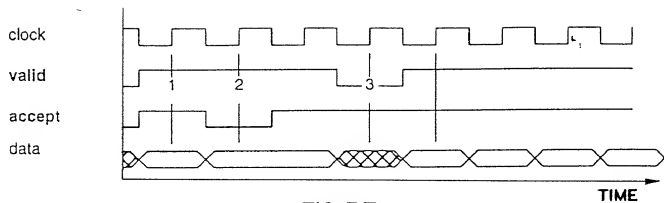


FIG.37

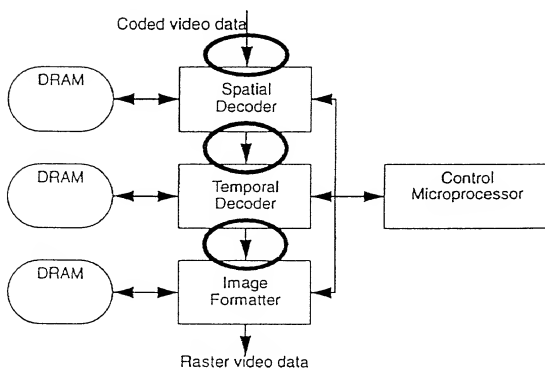


FIG.38

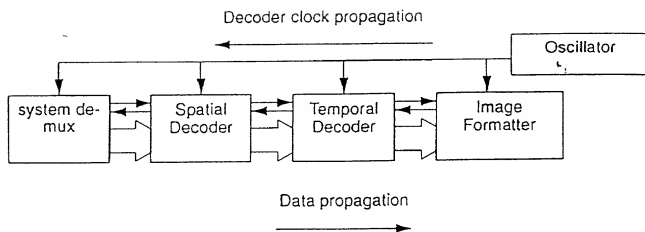


FIG.39

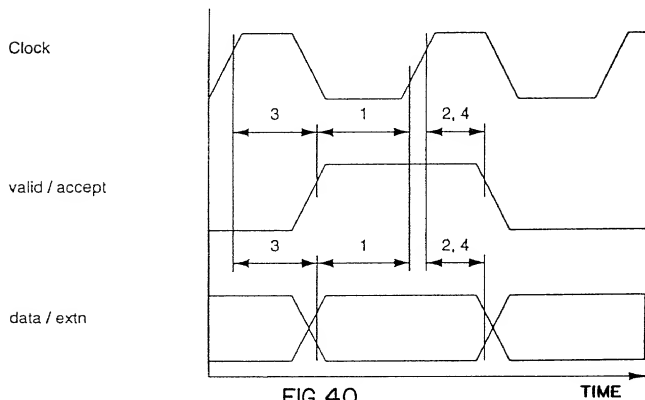


FIG.40



FIG.41

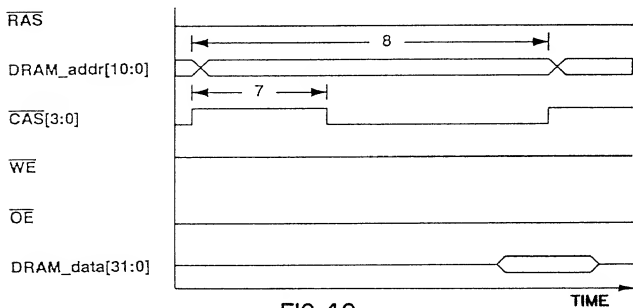


FIG.42

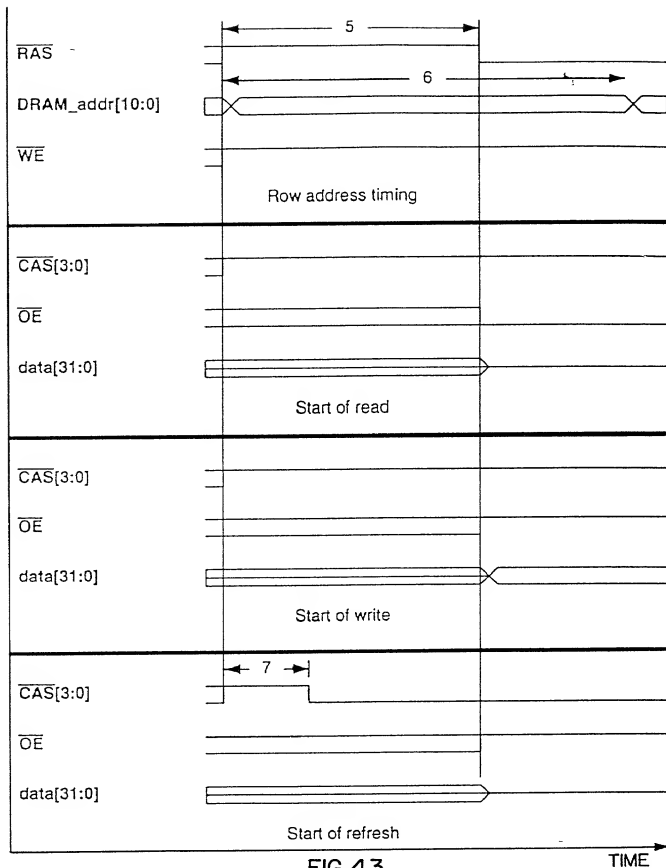


FIG.43

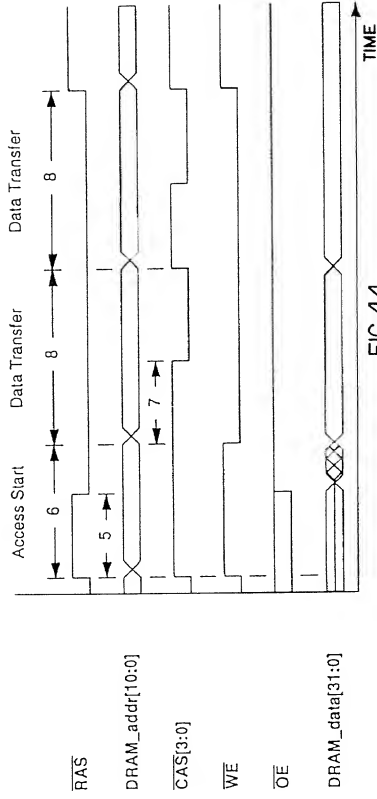


FIG.44

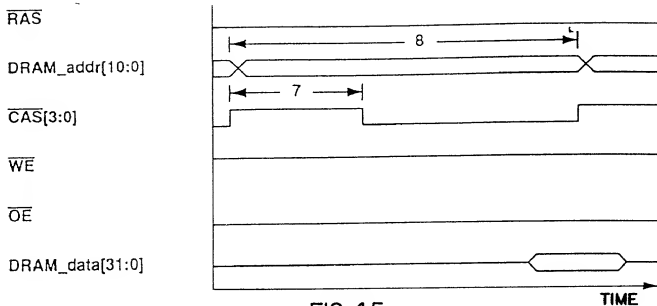


FIG.45

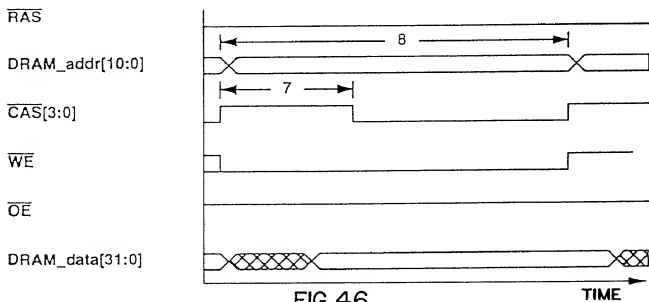


FIG.46

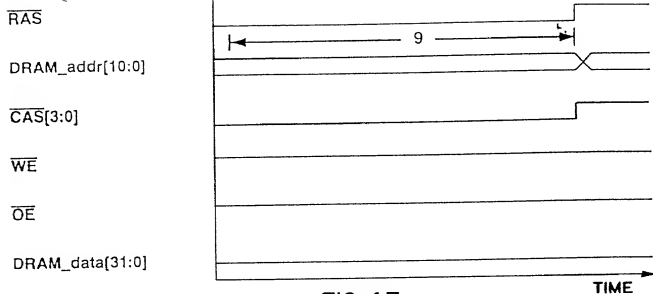


FIG.47

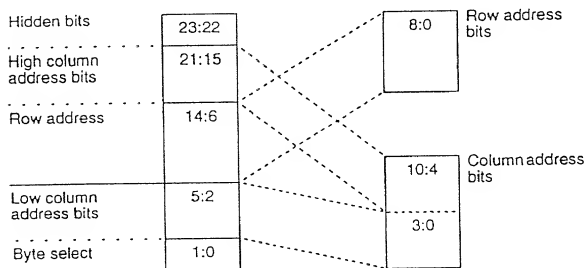


FIG.48

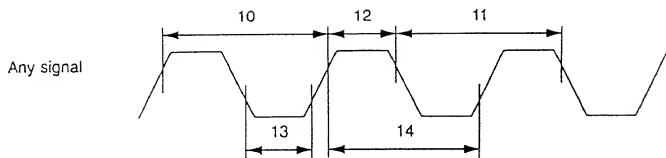


FIG.49

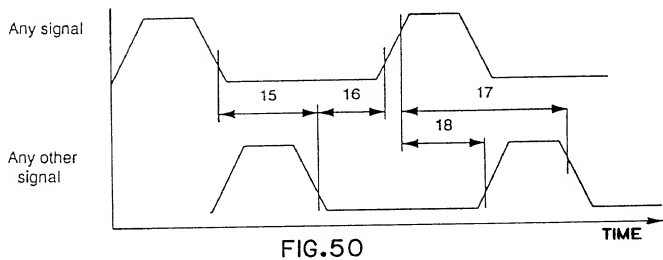
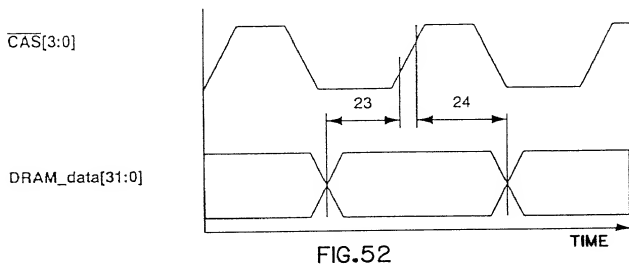
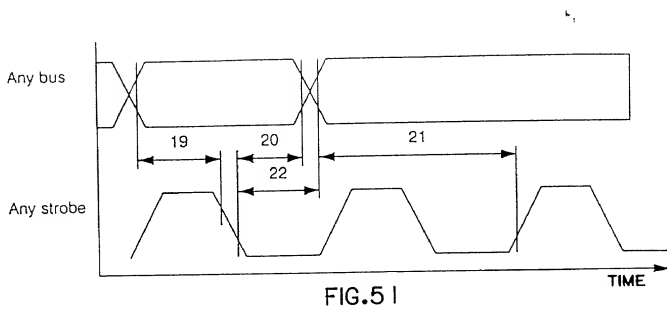


FIG.50



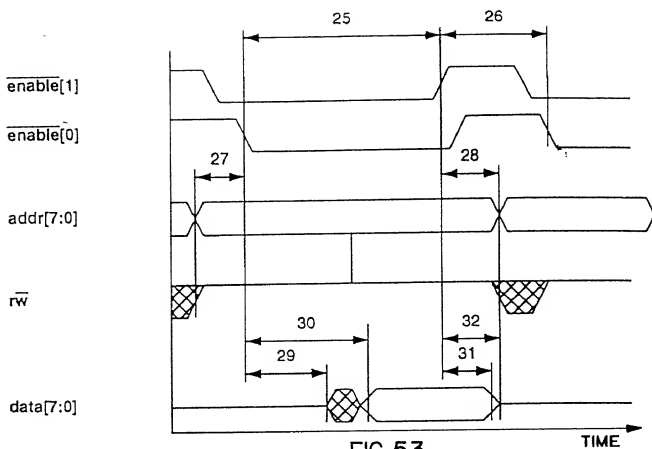


FIG.53

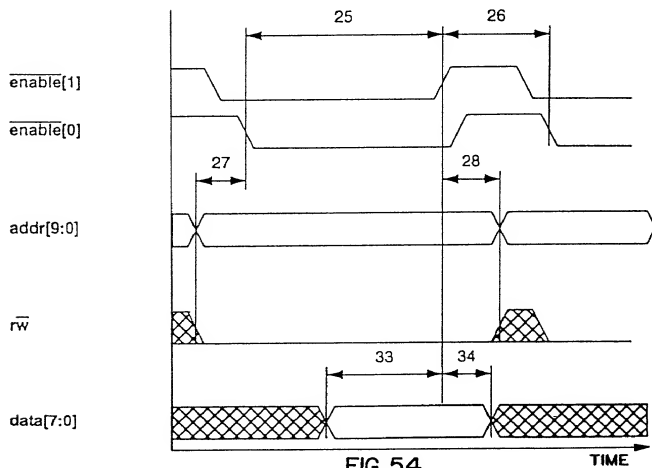


FIG.54

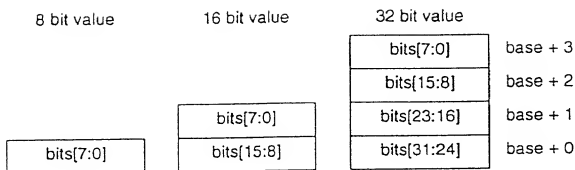


FIG.55

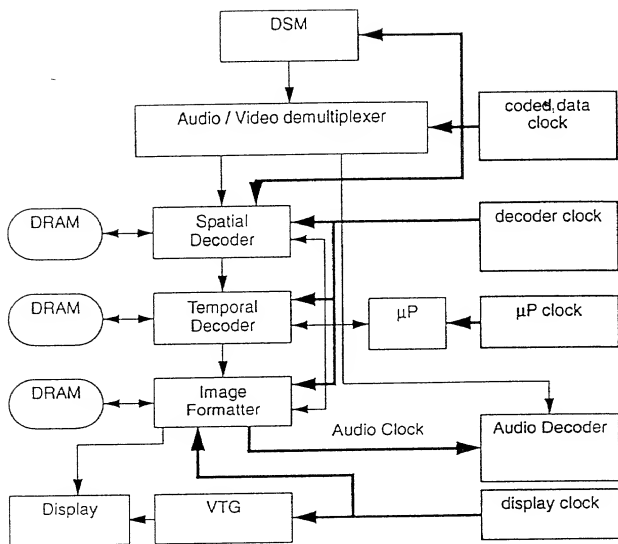


FIG.56

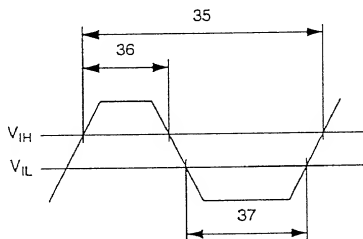


FIG.57

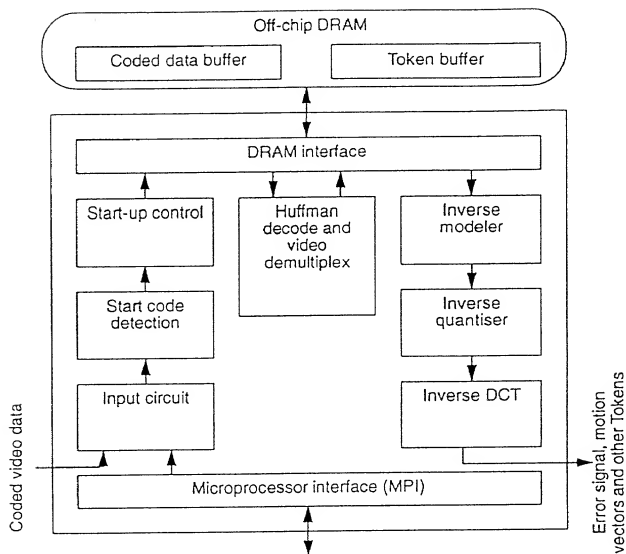


FIG.58

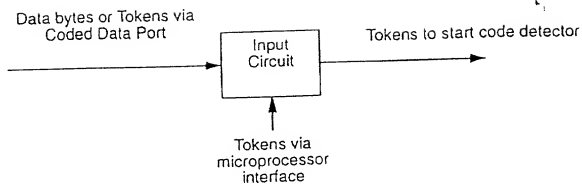


FIG.59

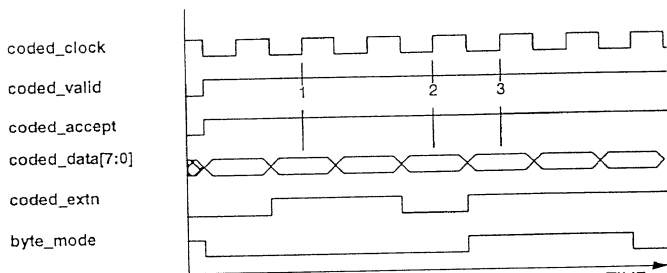


FIG.60

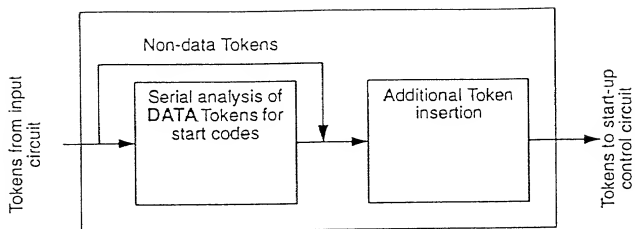


FIG. 61

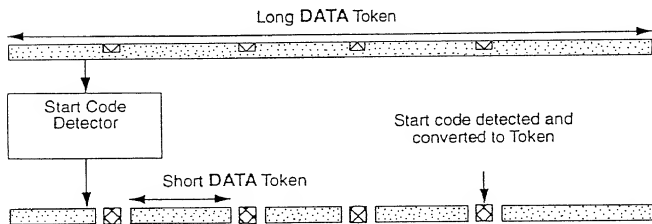


FIG. 62

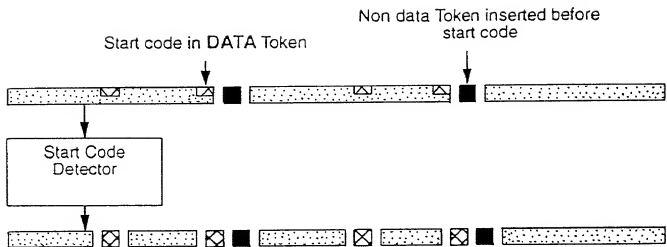


FIG.63

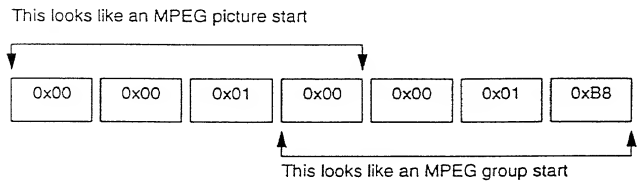


FIG.64

This looks like an MPEG slice start (0x28)

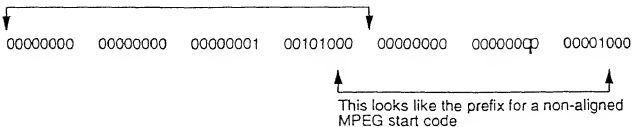


FIG.65

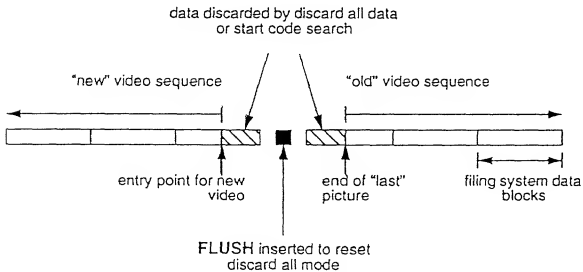


FIG.66

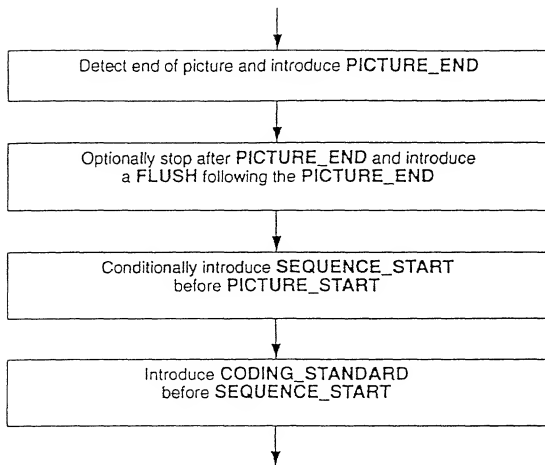


FIG.67

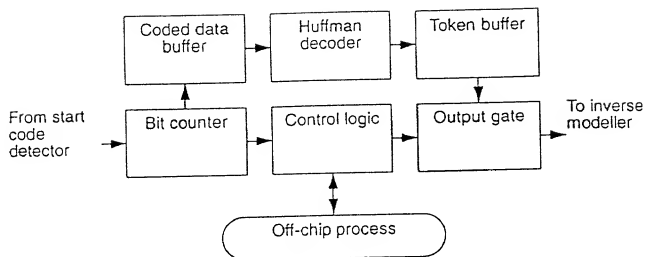


FIG.68

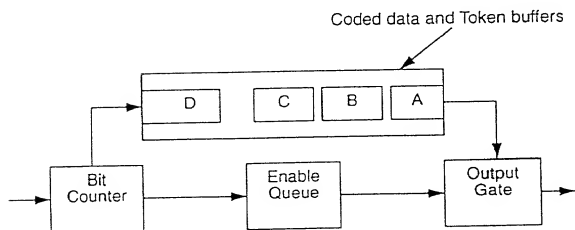


FIG.69

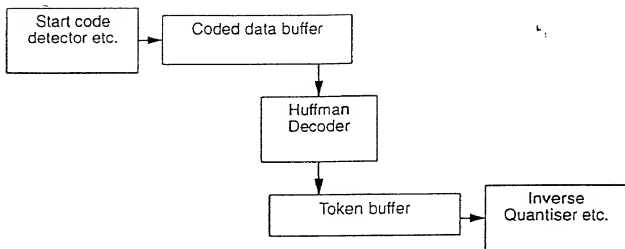


FIG.70

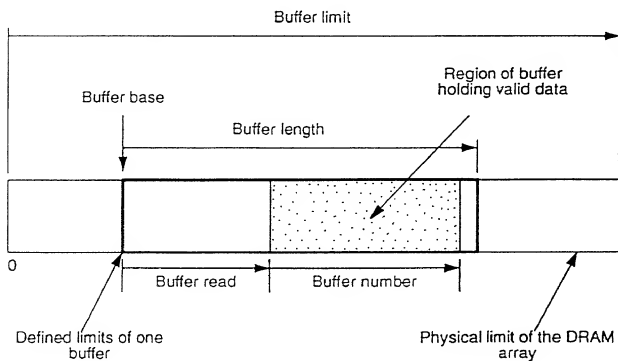


FIG.71

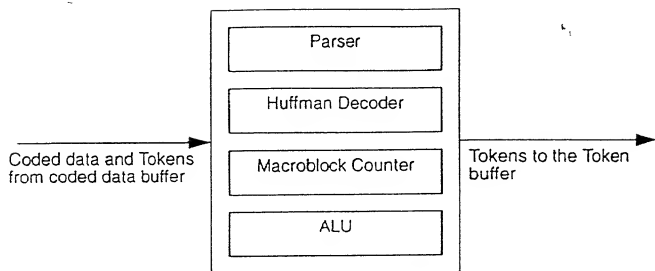


FIG.72

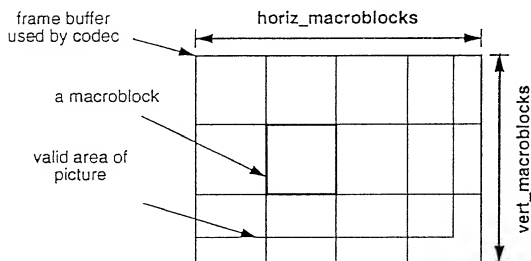


FIG.73

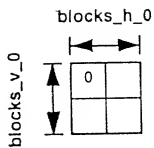


FIG.74A

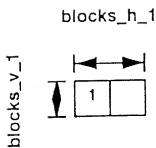


FIG.74B

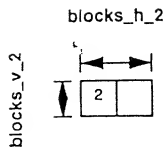


FIG.74C

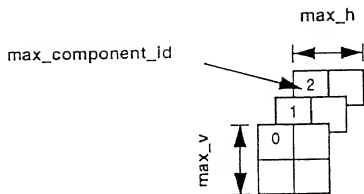


FIG.74D

$$\left\{ \begin{array}{l} \text{horiz\_macroblocks} = \frac{\text{horiz\_pels} + 15}{16} \\ \text{vert\_macroblocks} = \frac{\text{vert\_pels} + 15}{16} \end{array} \right.$$

FIG.75

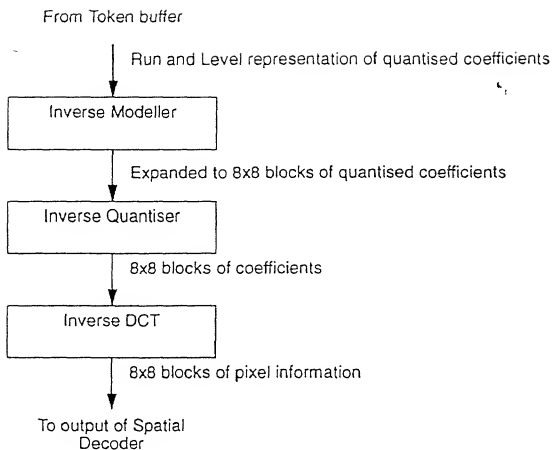


FIG.76

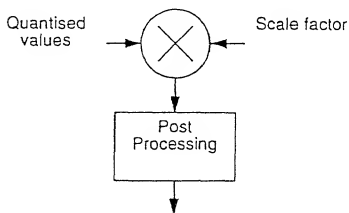


FIG.77

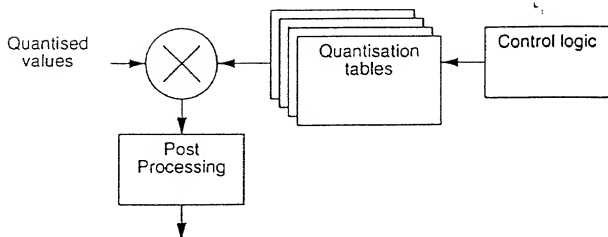


FIG.78

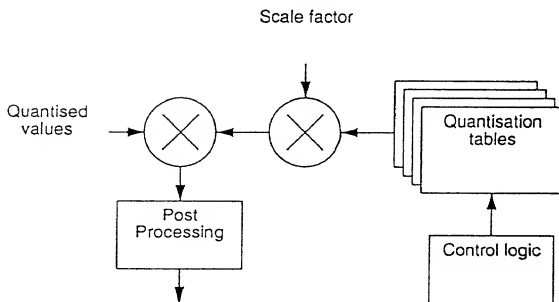


FIG.79

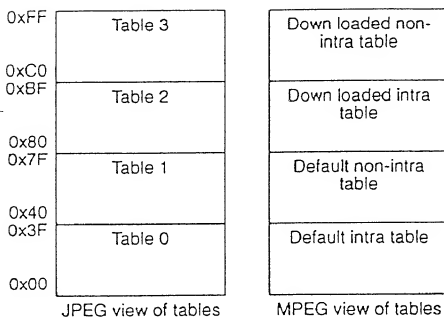


FIG.80

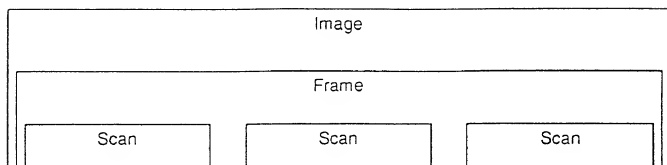


FIG.81

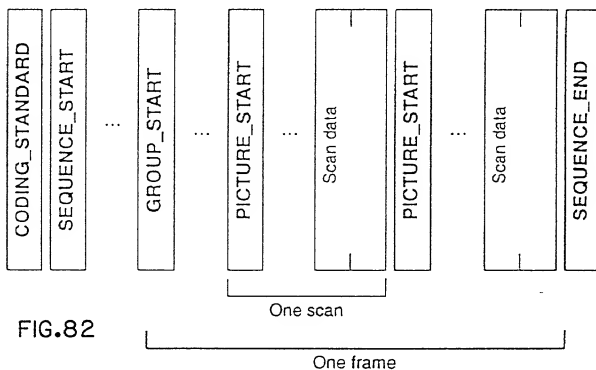


FIG.82

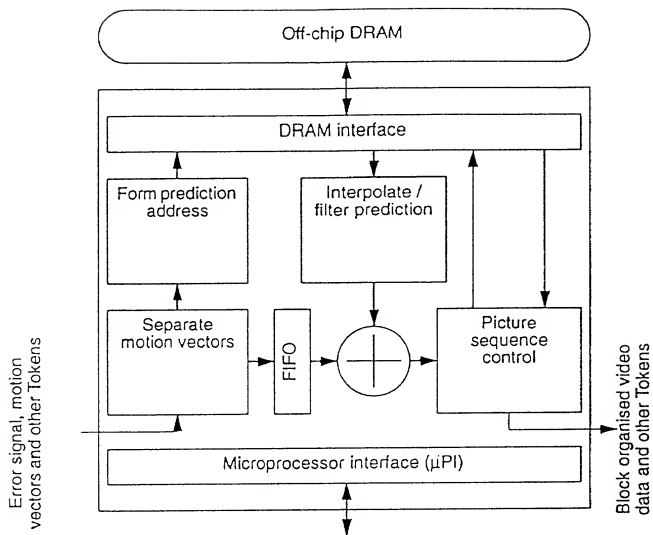


FIG.83

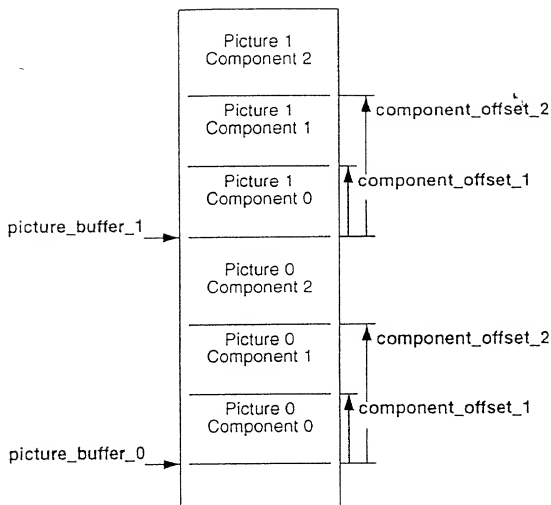


FIG.84

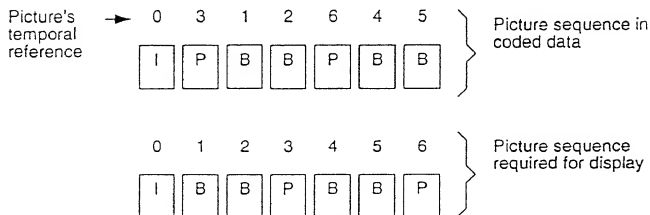


FIG.85

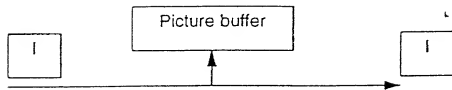


FIG.86

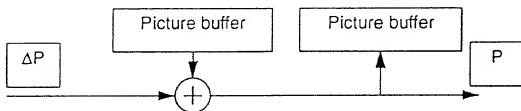


FIG.87

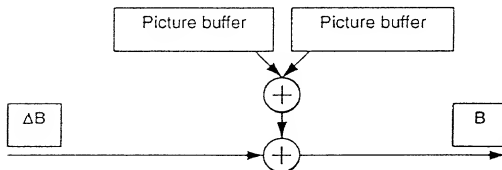


FIG.88

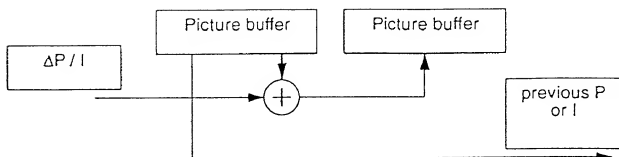


FIG.89

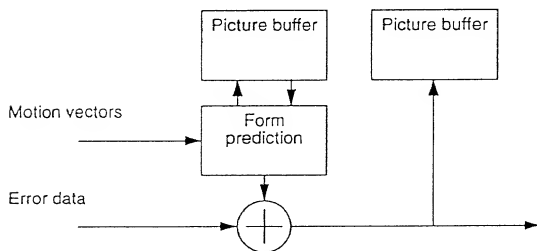


FIG.90



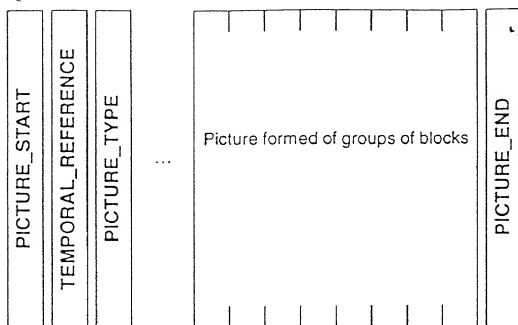


FIG.93

CIF		QCIF	
0	1	0	
2	3	2	
4	5	4	
6	7		
8	9		
10	11		

FIG.94

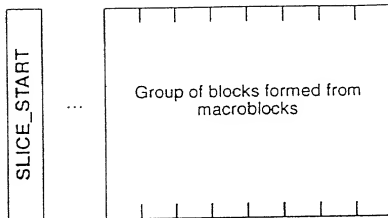


FIG.95

1	2	3	4	5	6	7	8	9	10	11
12	13	14	15	16	17	18	19	20	21	22
23	24	25	26	27	28	29	30	31	32	33

FIG.96

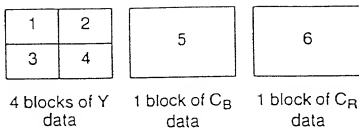


FIG.97

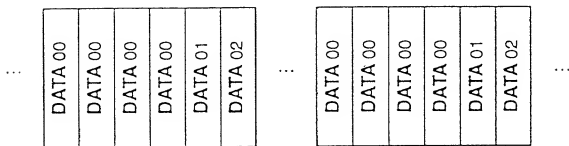


FIG.98

1	2	3	4	5	6	7	8
9	10	11	12	13	14	15	16

⋮

59	58	59	60	61	62	63	64
----	----	----	----	----	----	----	----

FIG.99

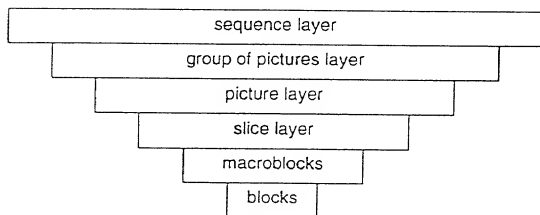


FIG. 100

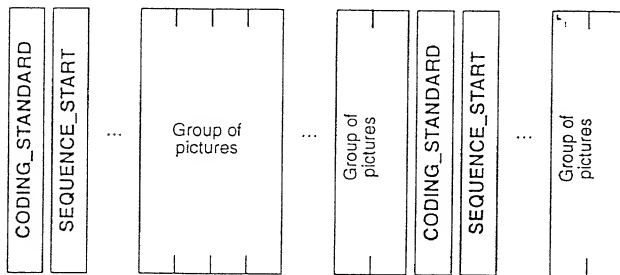


FIG. 101

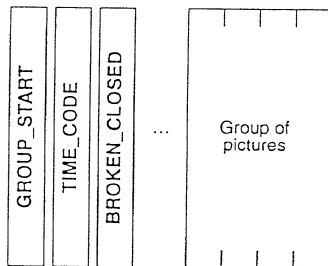


FIG. 102

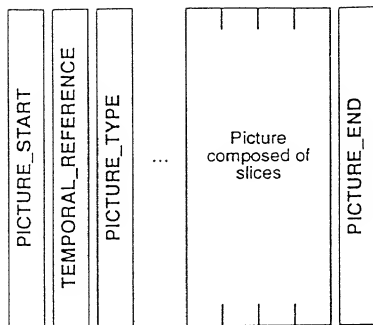


FIG. 103

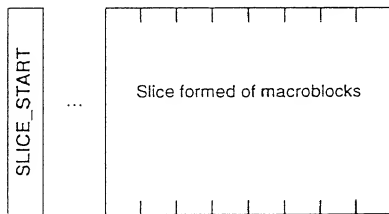


FIG. 104

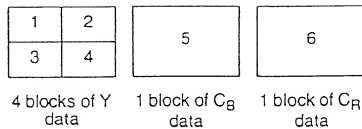


FIG. 105

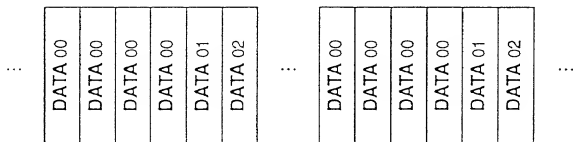


FIG. 106

09775388-000001

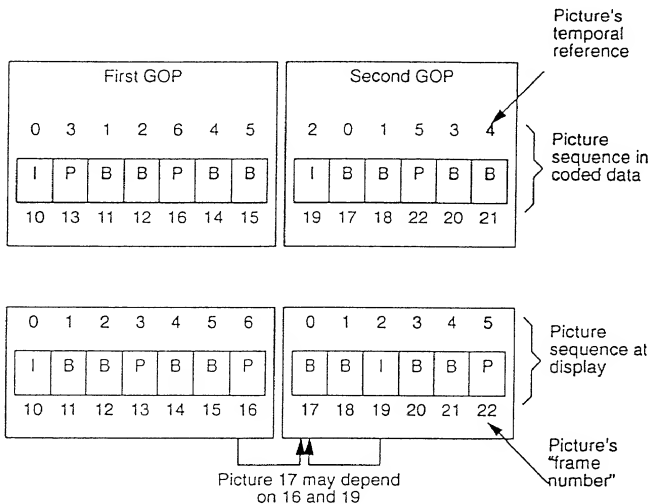


FIG. 107



FIG. I 08

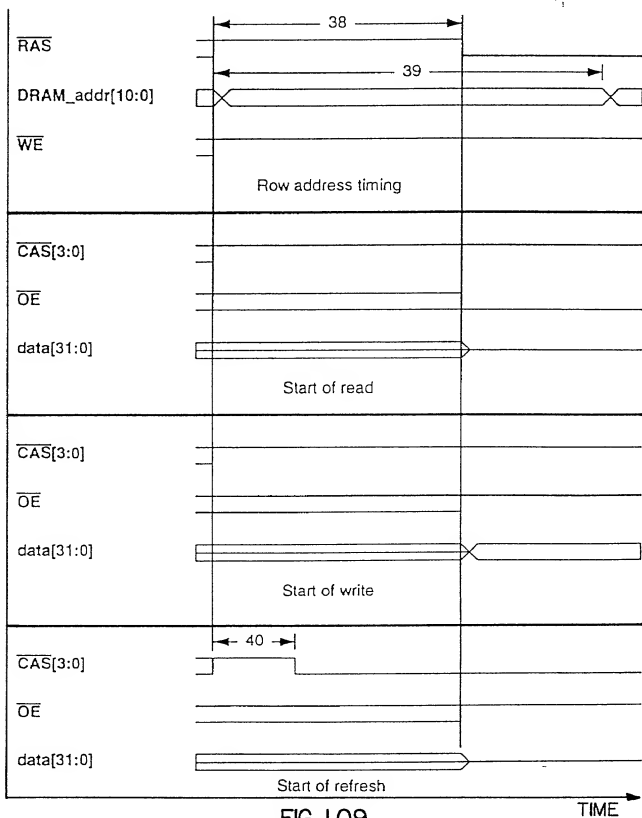


FIG. I 09

TIME

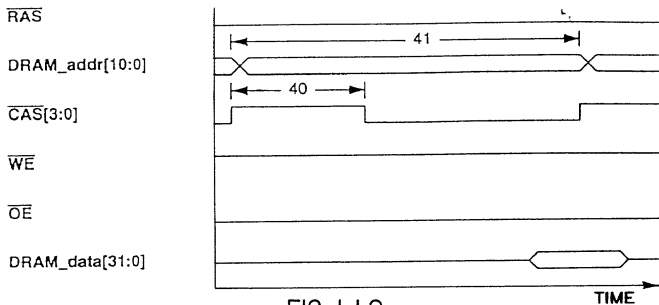


FIG. 110

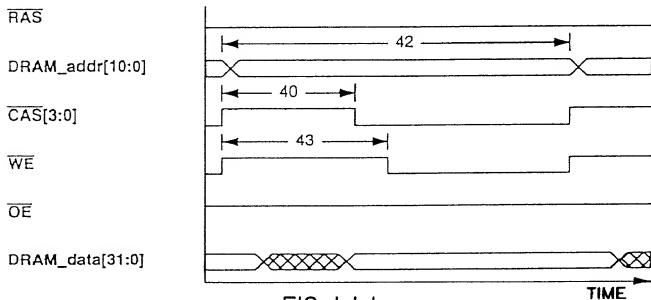


FIG. 111

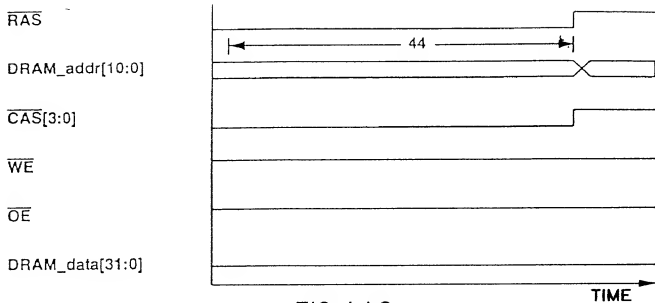


FIG. 112

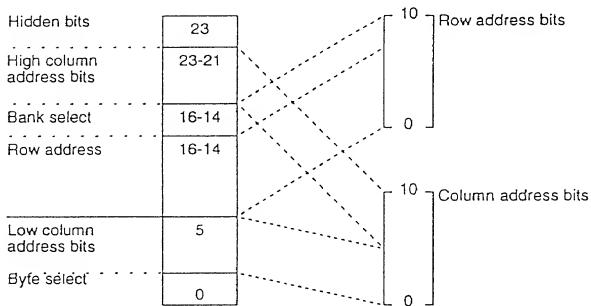


FIG. 113

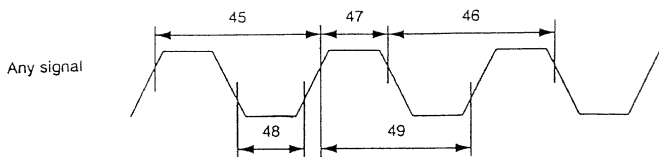


FIG. 114

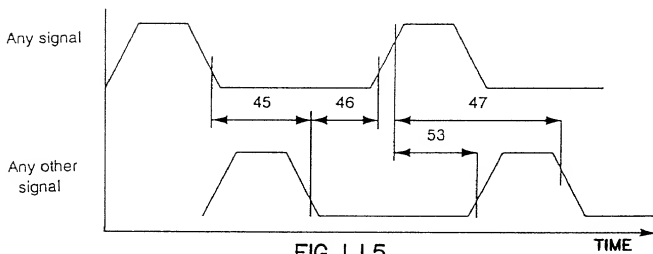
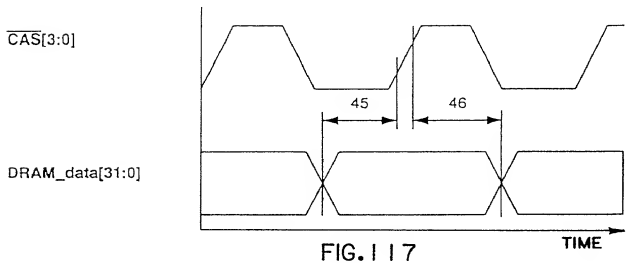
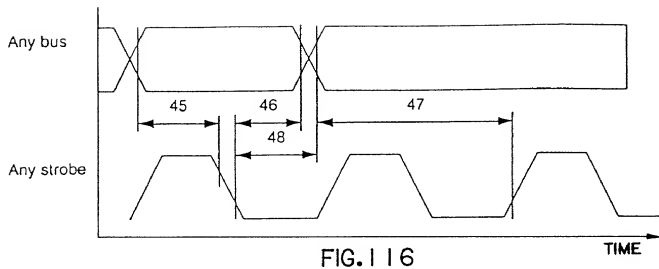


FIG. 115







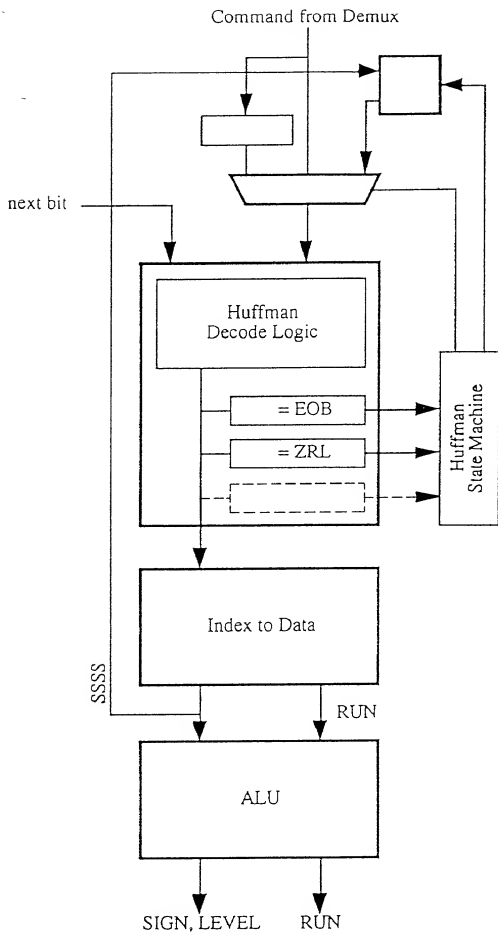


FIG. 120

```

graph TD
    A([Read AC JPEG Coefficients]) --> B[Decode VLC]
    B --> C{Index = ZRL ?}
    C -- Y --> B
    C -- N --> D{Index = EOB ?}
    D -- Y --> B
    D -- N --> E[Form RUN & SIZE I to D]
    E --> F[Read SIZE Bits]
    F --> B

```

```

graph TD
    A([Read DC JPEG Coefficients]) --> B[Decode VLC]
    B --> C{Index = 0 Size?}
    C -- N --> D[Form RUN & SIZE I to D]
    D --> E[Read SIZE Bits]
    C -- Y --> E
    E --> F([Accept New Command])
  
```

FIG. 121B

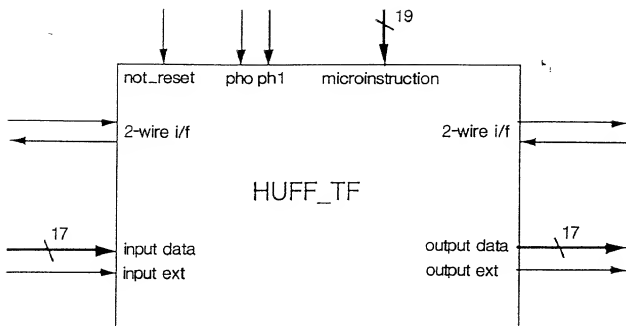


FIG. I 22

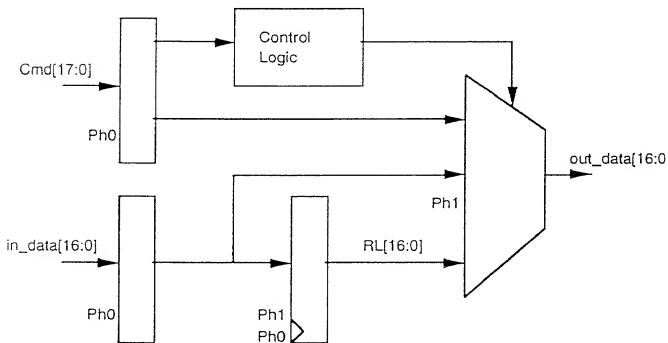


FIG. I 23

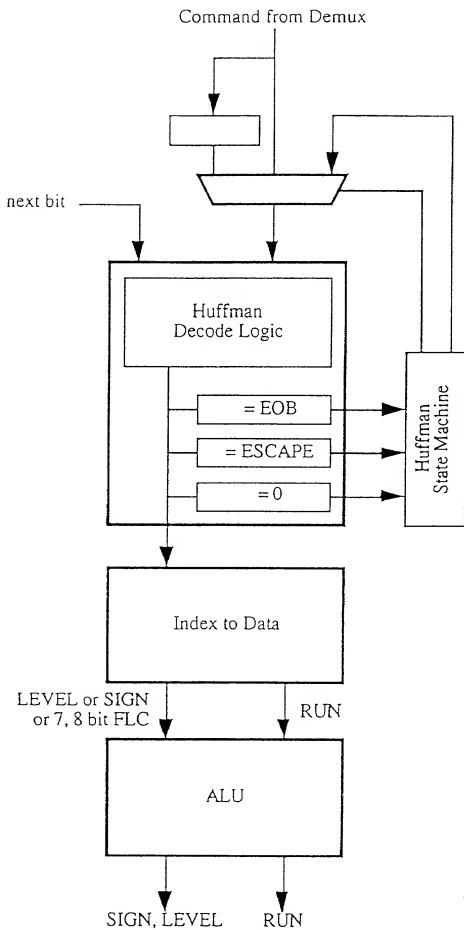


FIG. 124

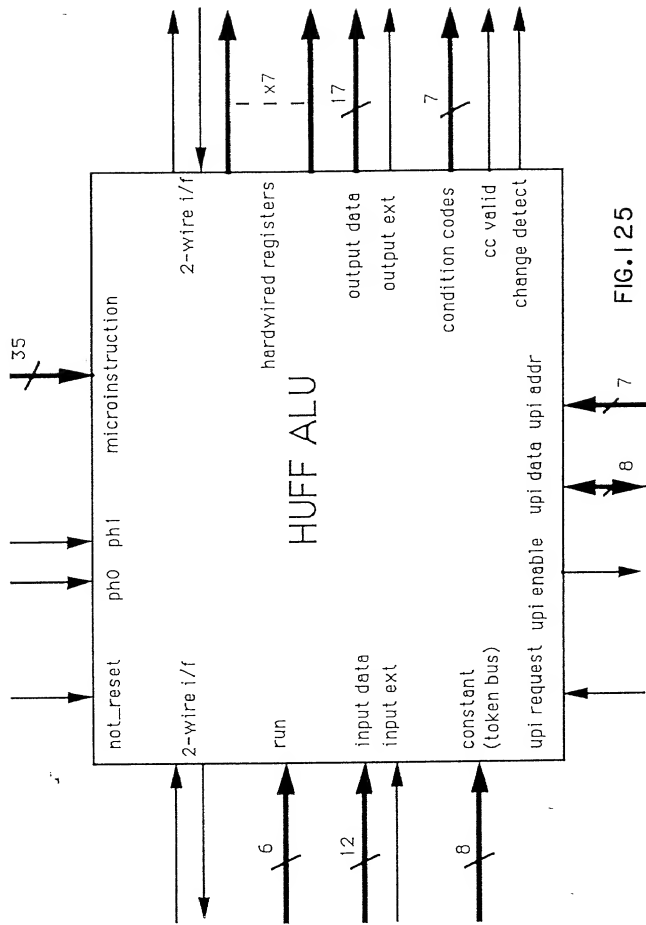


FIG. 125

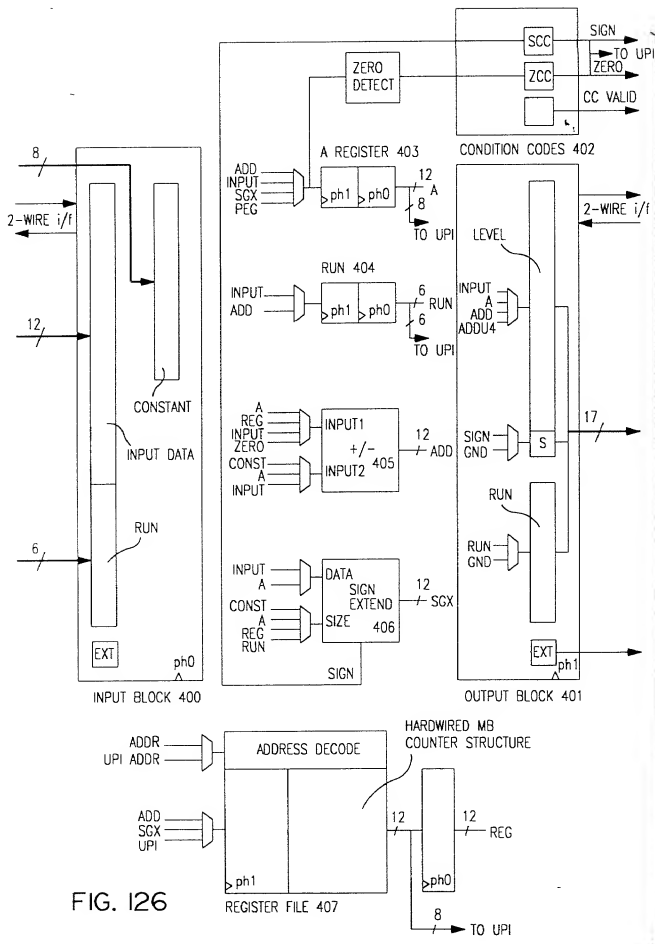


FIG. 126



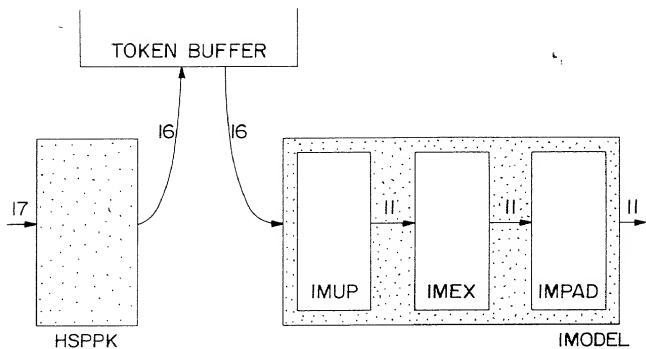


FIG. 128

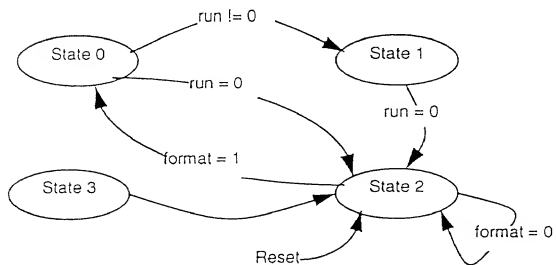


FIG. 129



Address Generator  
420

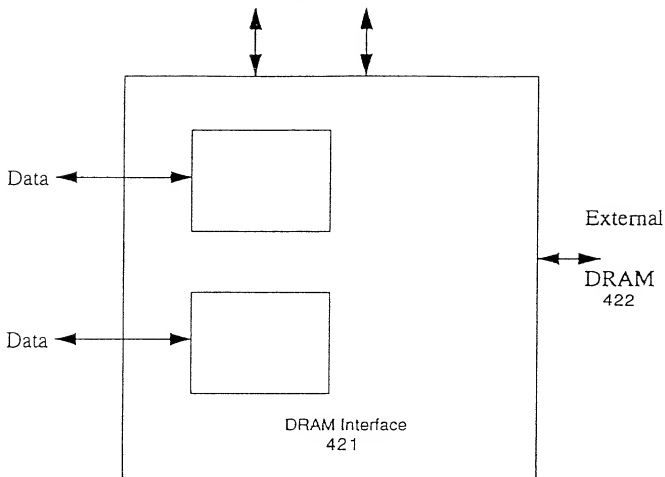


FIG. 131

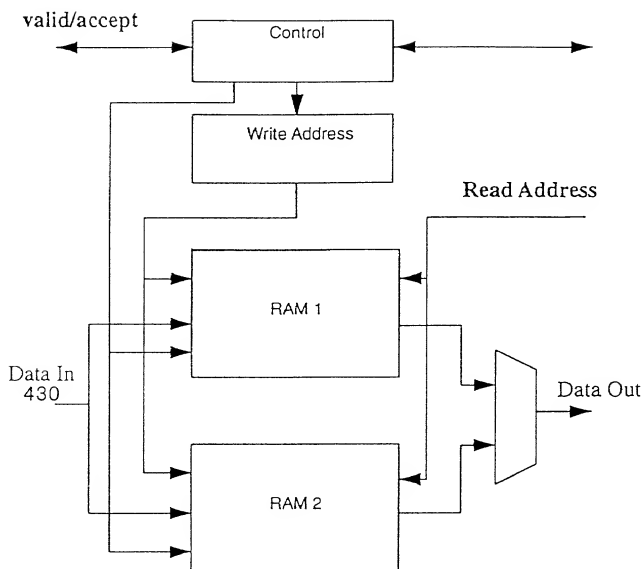


FIG. 132

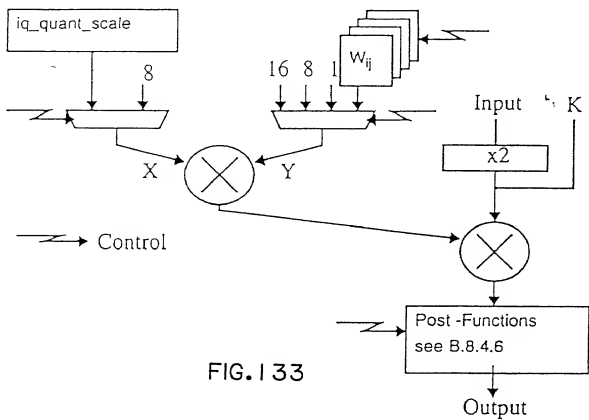


FIG. 133

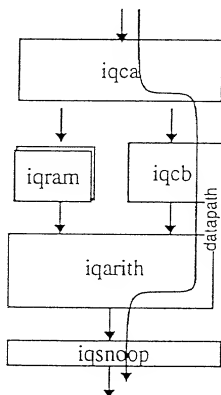


FIG. 134

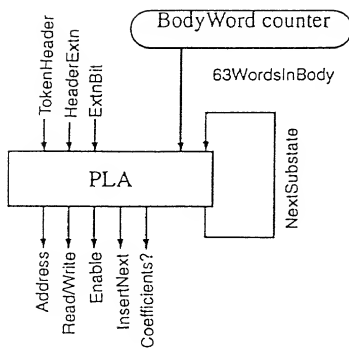
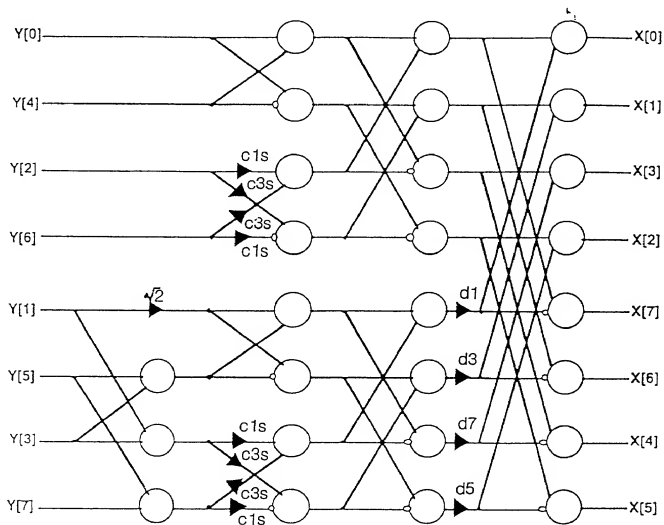


FIG. 135

09770306-020001



Key:-

coef  
→ constant coefficient multiplier

○, ○ adder, subtractor

FIG. I 36

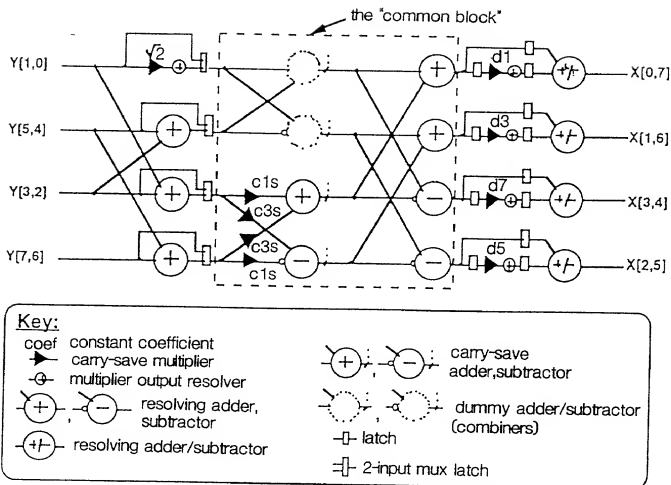


FIG. 137

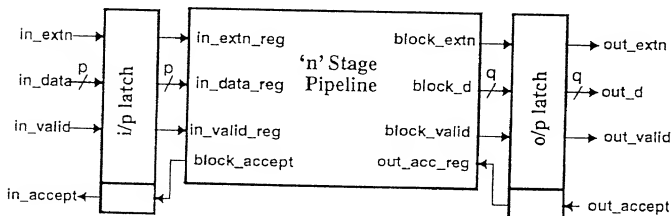


FIG. 138

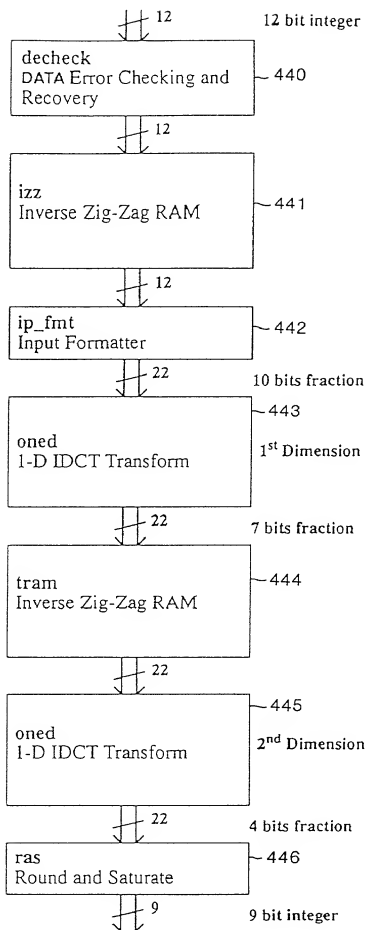


FIG. 139

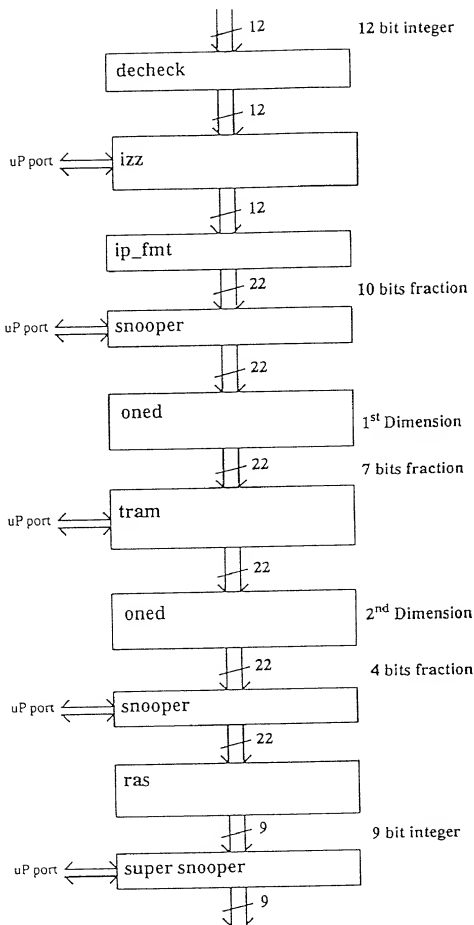
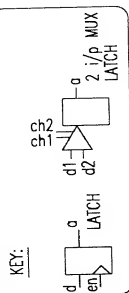
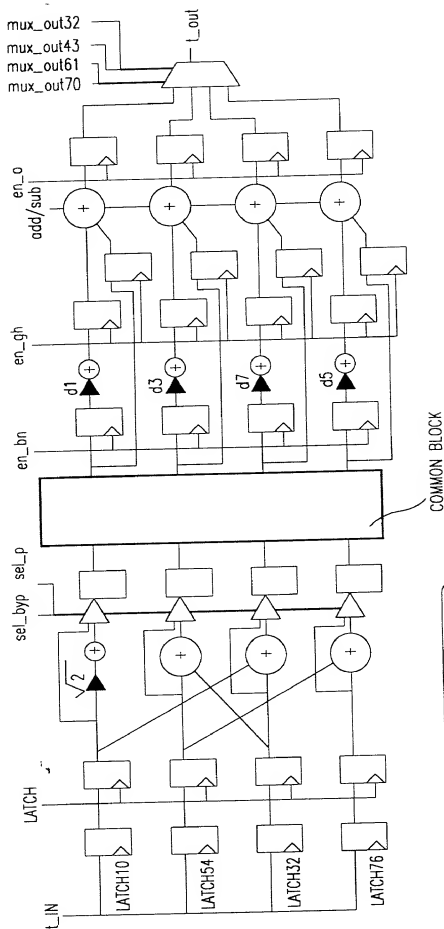


FIG. I 40



NOTE: "COMMON BLOCK" IS ENTIRELY  
COMBINATIONAL (NO LATCHING)

FIG. 141

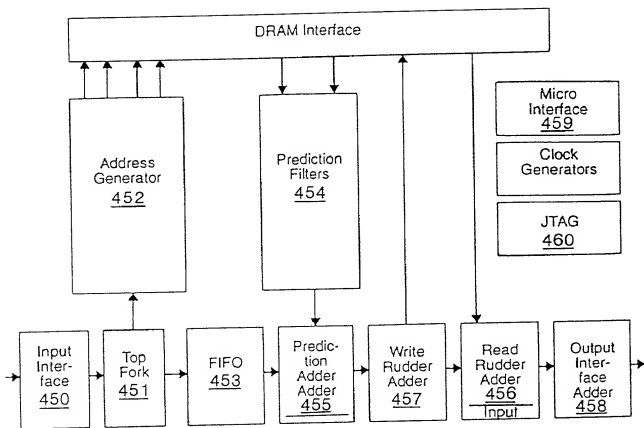


FIG. 142

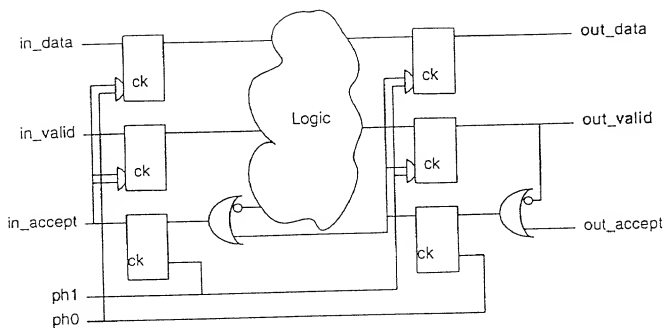


FIG. 143

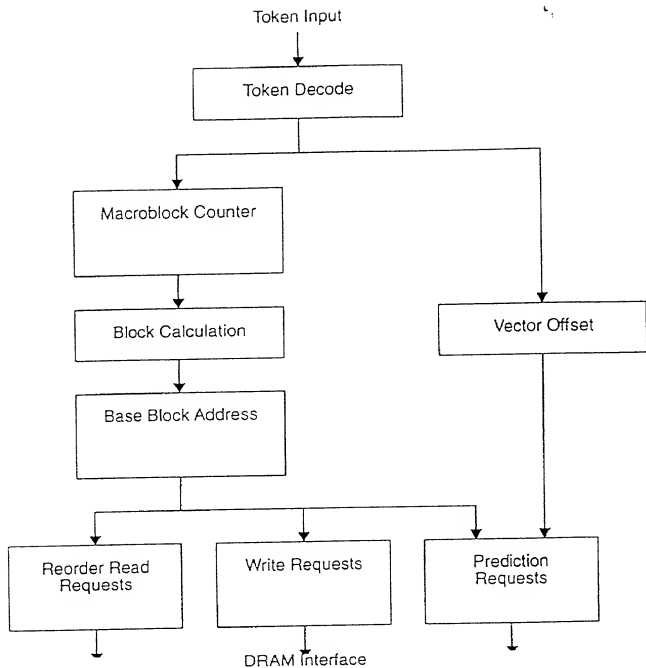


FIG. 144

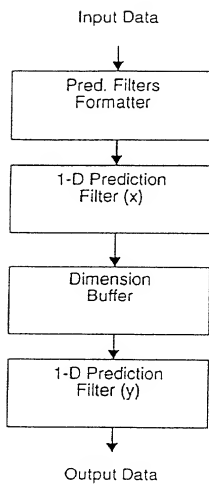


FIG. 1 47

```
graph TD; FD[Forward Data] --> FPF[Forward Prediction Filter]; BD[Backward Data] --> BPF[Backward Prediction Filter]; FPF --> PFA[Prediction Filters Adder]; BPF --> PFA; FD --> PFA; PFA --> TO[To Prediction Adder];
```

FIG. 146

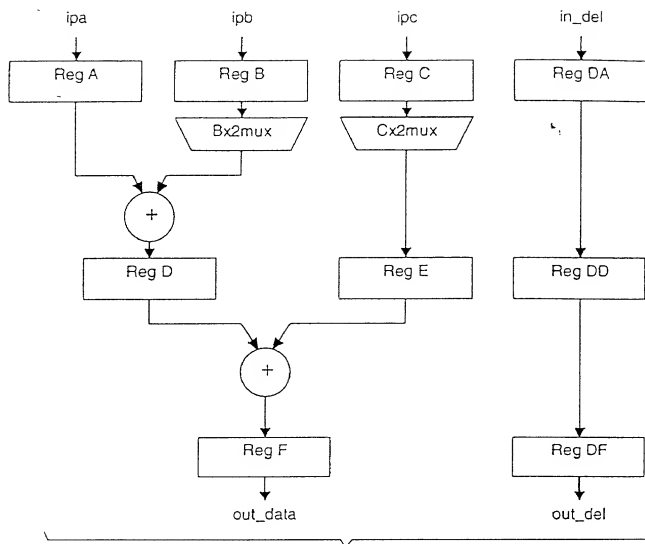


FIG. 148

0	1	2	3	4	5	6	7
8	9	10	11	12	13	14	15
16	17	18	19	20	21	22	23
24	25	26	27	28	29	30	31
32	33	34	35	36	37	38	39
40	41	42	43	44	45	46	47
48	49	50	51	52	53	54	55
56	57	58	59	60	61	62	63

FIG. 149

FIG. 150

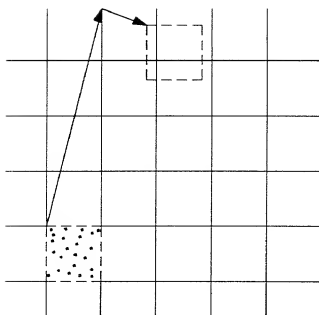


FIG. 151

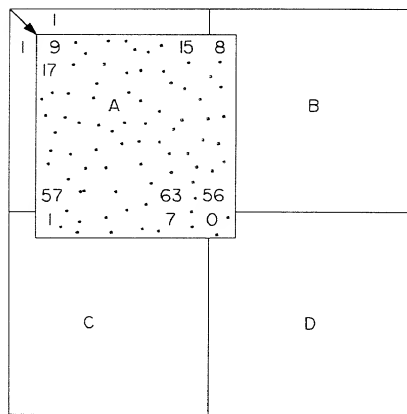


FIG. 152

00779300-020801

## Read Cycle

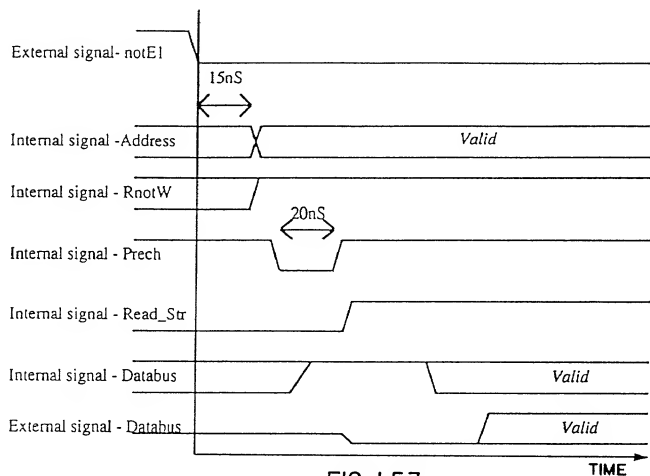


FIG. I 53

## Write Cycle

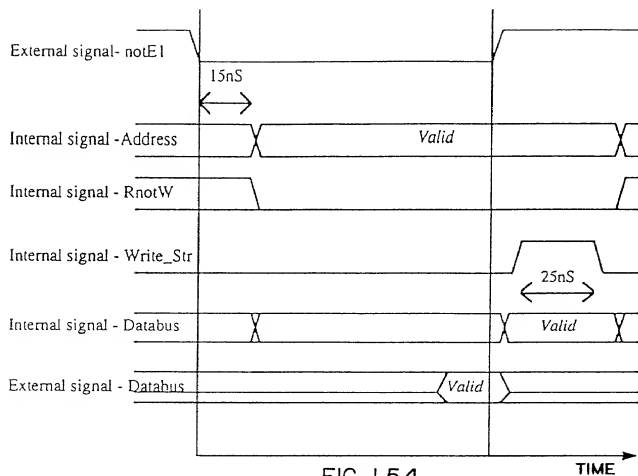


FIG. I 54

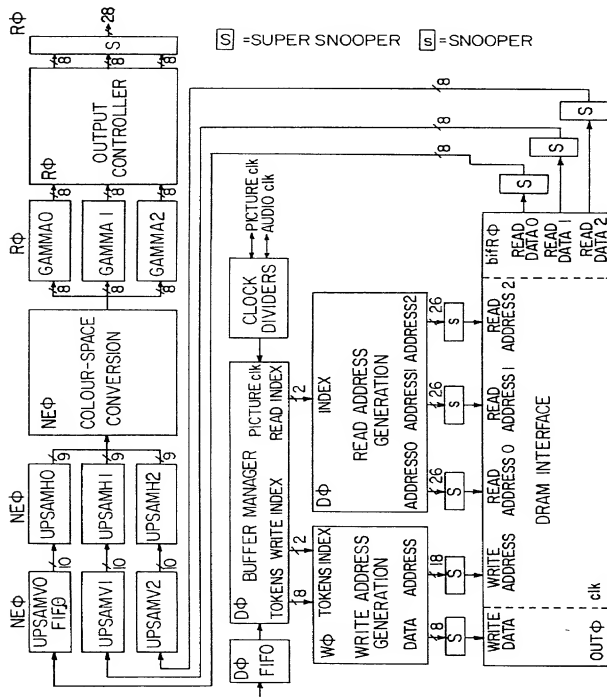
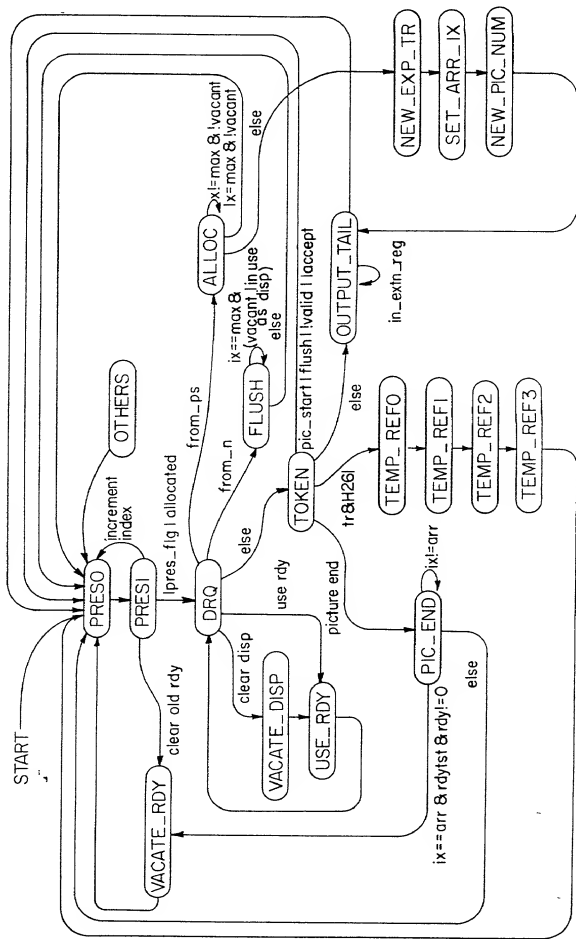


FIG. 155





2

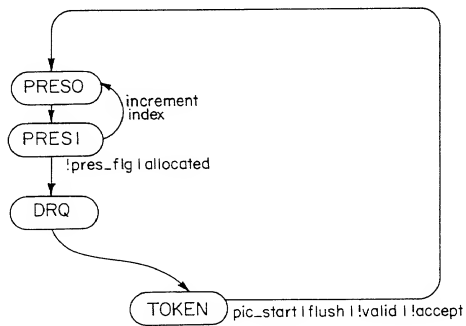
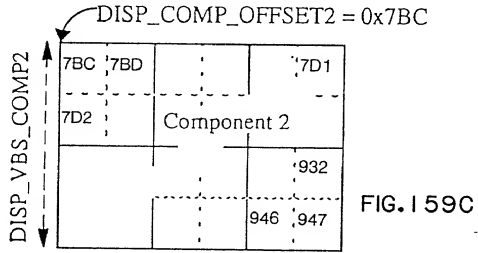
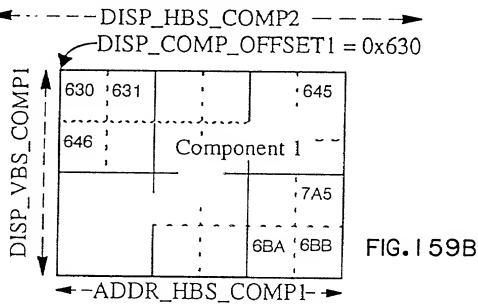
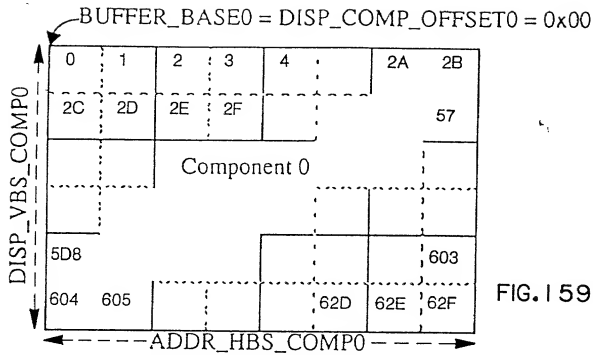


FIG. 158

108020-2015/460



108020 2856260

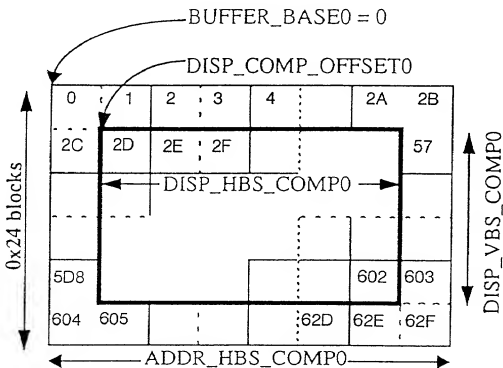


FIG. 160



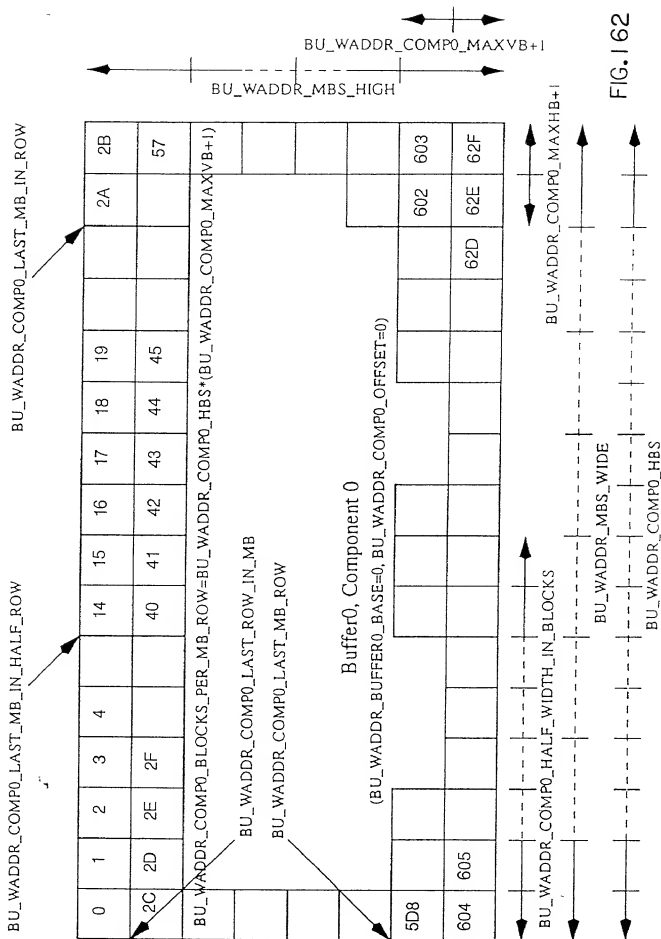
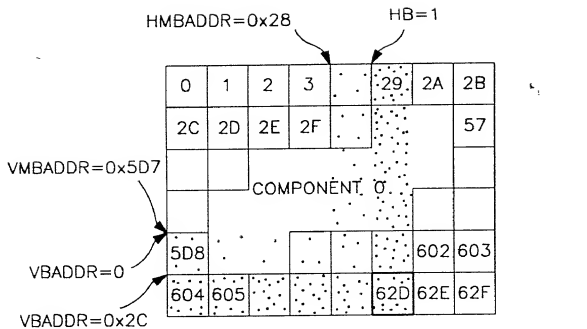
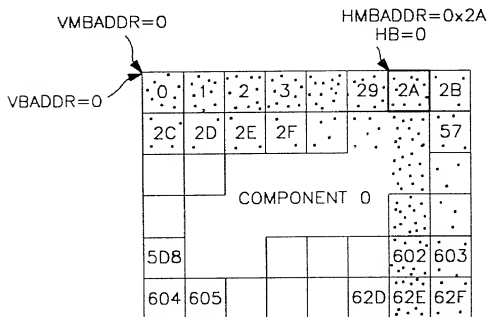


FIG. 162



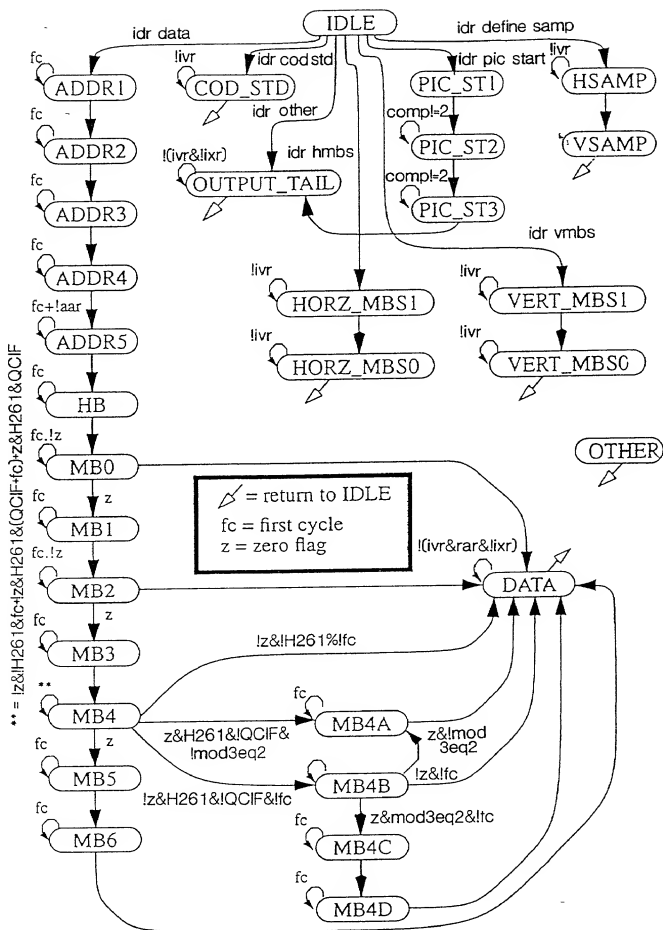
$$\text{BLOCK ADDRESS} = 0 + 0 + 0 \times 5D8 + 0 \times 28 + 0 \times 2C + 1 = 0 \times 62D$$

FIG. 1 63A



$$\text{BLOCK ADDRESS} = 0 + 0 + 0 + 0 \times 2A + 0 + 0 = 0 \times 2A$$

FIG. 1 63B



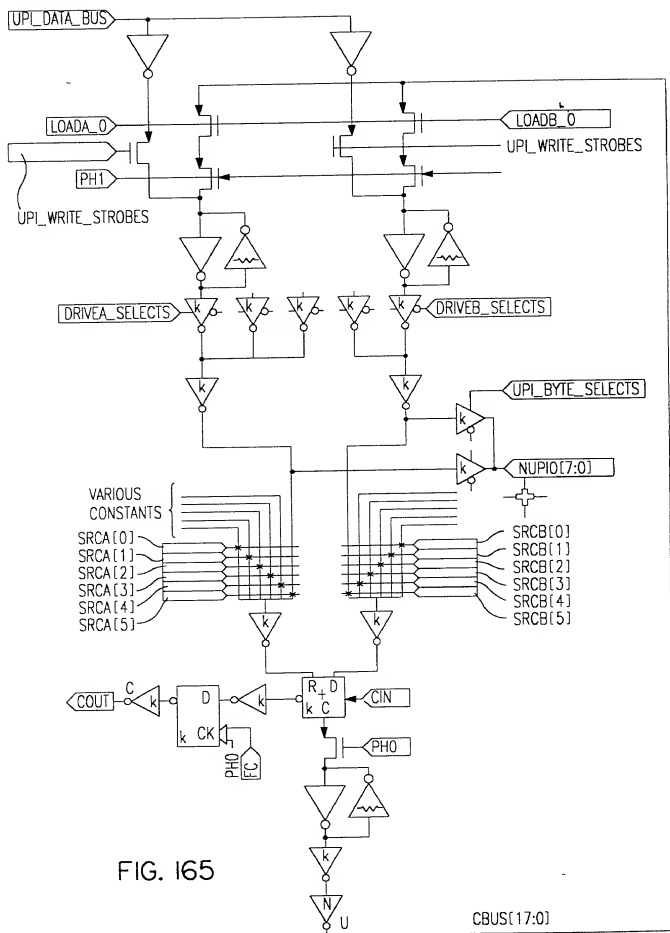
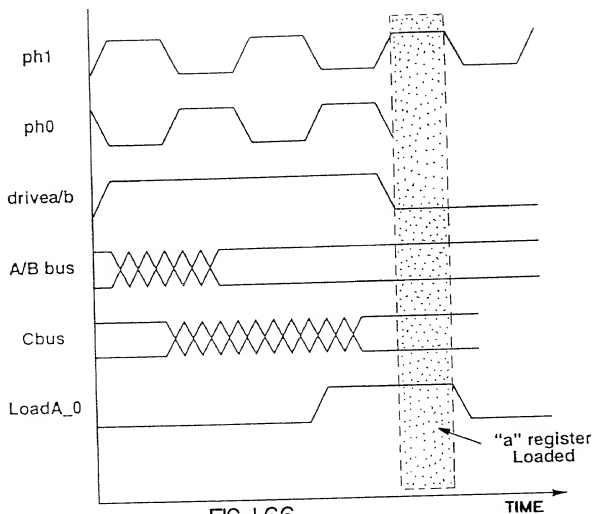


FIG. 165



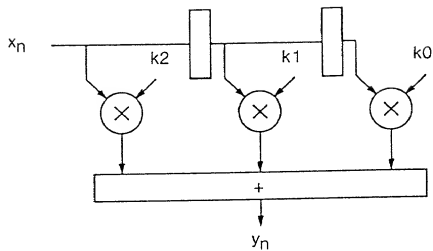


FIG. 167

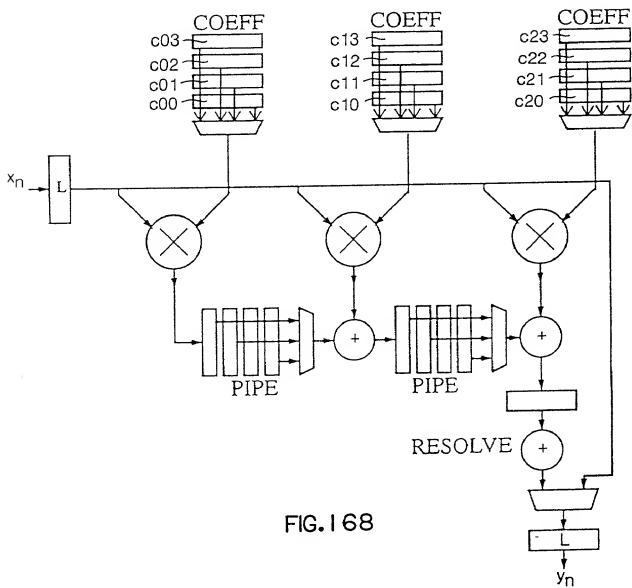


FIG. 168

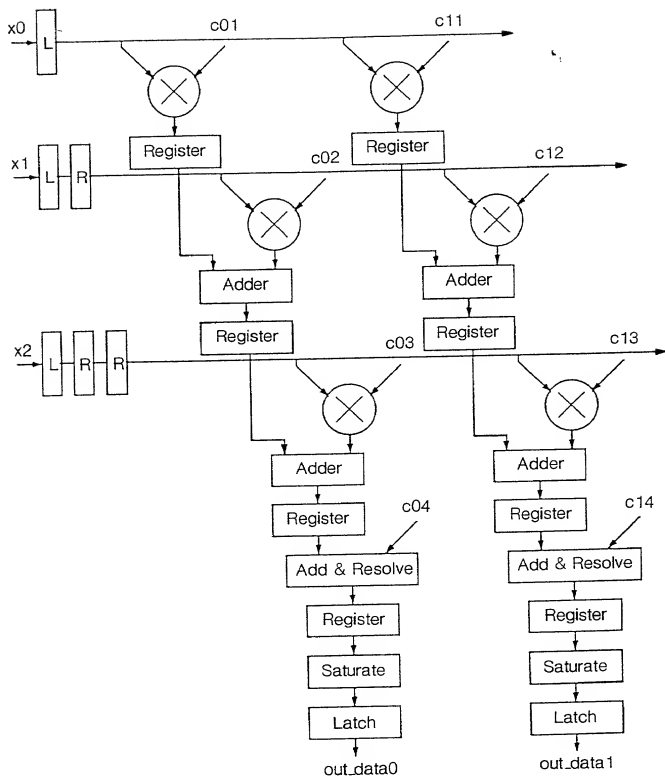


FIG. 169